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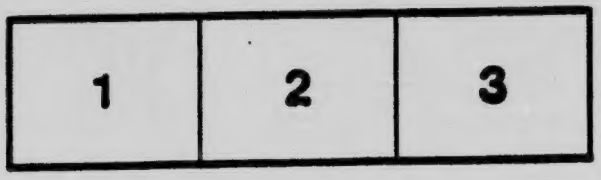

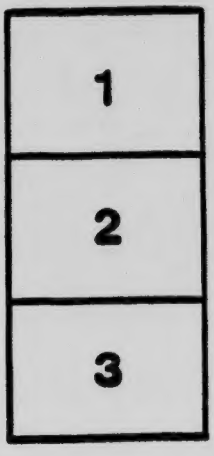

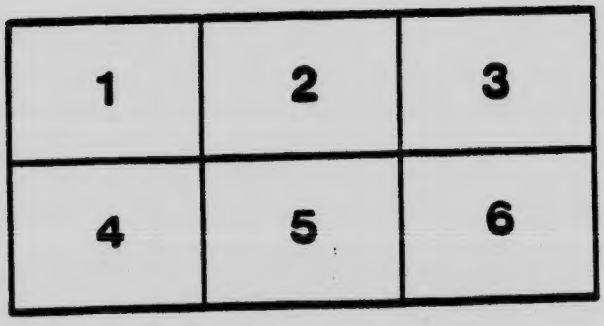

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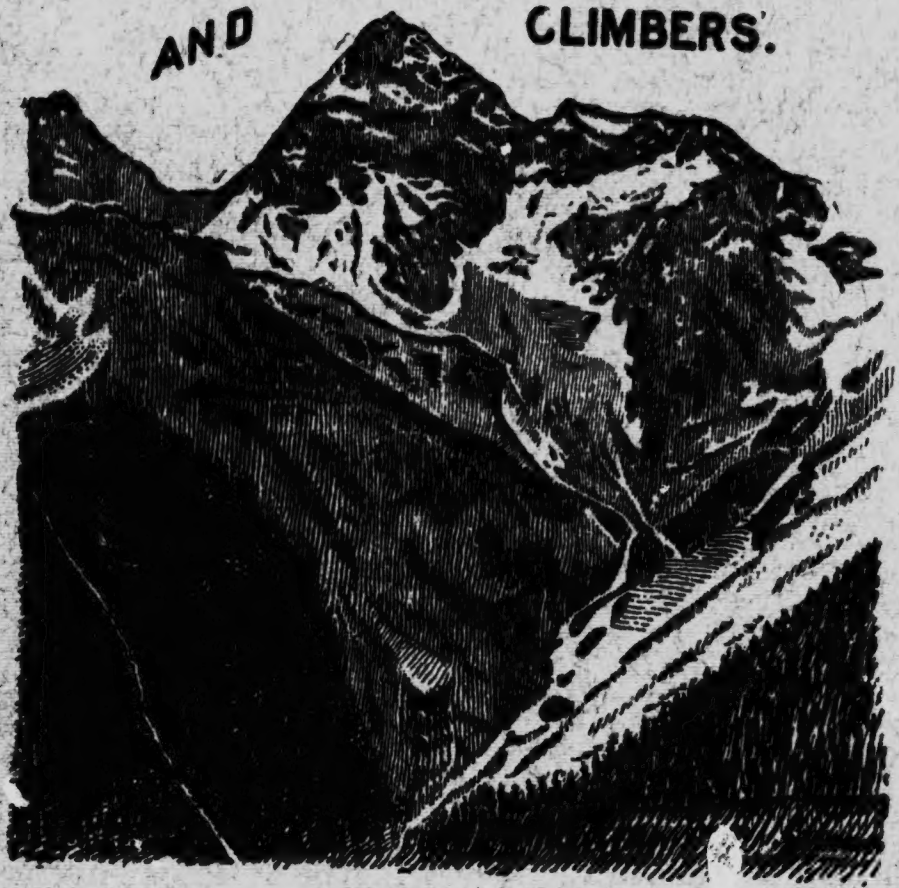
SELKIRK MOUNTAINS

A GUIDE FOR MOUNTAIN PILGRIMS AND CLIMBERS.



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THE

Selkirk Mountains

A Guide for Mountain Climbers and Pilgrims

Information by
A. O. WHEELER, F.R.G.S., A.C.C., A.C., A.A.C.

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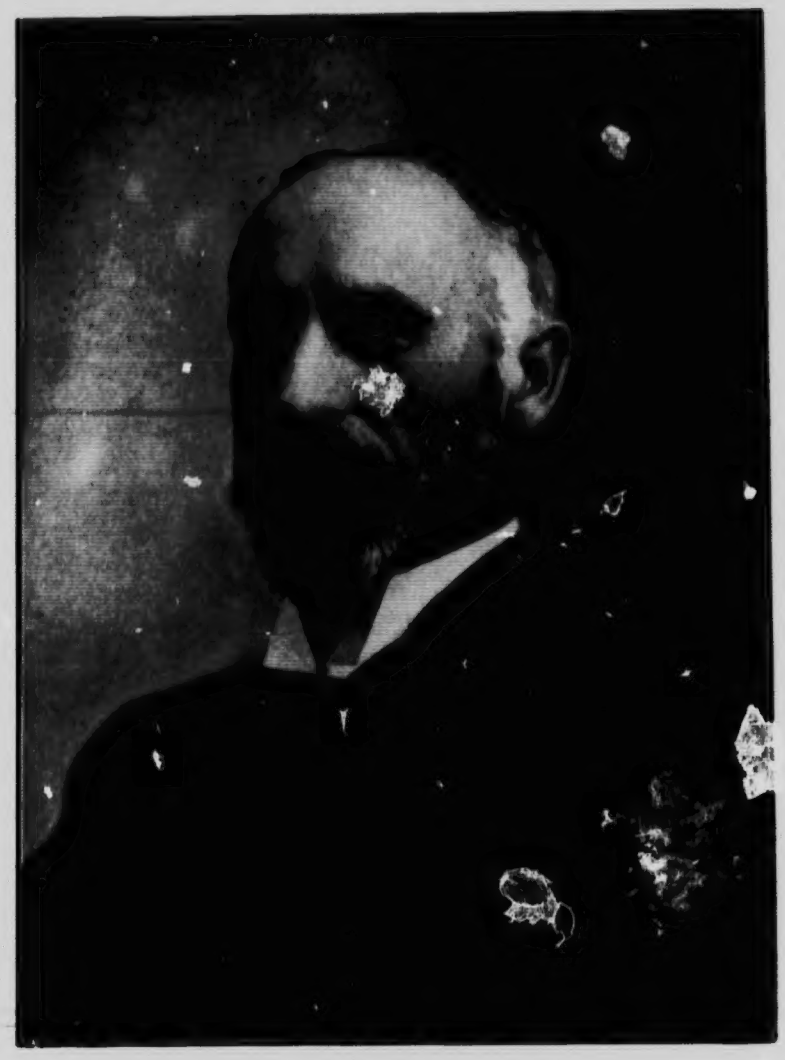

Arthur O. Wheeler, First President of Alpine Club

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FOREWORD

The accompanying Guide to The Selkirk Mountains centralises around Glacier House, the most delightful of all the delightful summer mountain resorts of the Canadian Pacific Railway. It is situated on the western slopes, three miles from the crossing of the Summit, and the information given is here fairly complete. Outside this centre the book touches the districts of Golden, Windermere and Revelstoke, but in such localities the mountain areas are as yet little known, few of the topographical features are named and there are no maps of the slightest use to the mountain-pilgrim.

The information dealing with the Glacier section is, for the most part, obtained from photo-topographical surveys made by the writer during the years 1901, 1902 and 1905, augmented by subsequent information gathered for the purposes of the Alpine Club of Canada.

The text is written by Mrs. H. J. Parker, of Winnipeg, who has collaborated with me in presenting the book to the public in its present form. To her earnest collaboration, hard work and gifted pen any success that may attend the publication is altogether due.

It is hoped that the Guide will be of use to the mountaineer, and may enable the general public to enjoy more readily the unique alpine beauties of these white-shrouded peaks, mighty ice-falls and hazy blue valleys, where wild glacial torrents foam through primeval forests and silver falls leap down precipices from the snows above.

We have received much kind assistance from various persons who have truly at heart the best welfare of this very real wonderland, and to whom we now wish to convey publicly our most grateful thanks. They are for illustration to Byron Harmon, of Banff; Miss M. Vaux and Mrs. Charles Schaffer, of Philadelphia; Howard Chapman and Ivor N. Austin, of Victoria, B.C.; for latest information of trails and facilities for minor expeditions to S. H. Baker, of Banff. Concerning the vicinity of Revelstoke, J. P. Forde and Rupert W. Haggen have furnished information.

In the Golden and Windermere districts we are indebted to Miss C. D'A. Lang, of Golden, who has gathered information from the local guides and outfitters and at much trouble put it in tangible form; to Charles D. Ellis, of Ellenvale Ranch, B. G. Hamilton of Wilmer and H. E. Forster, Firlands; while the illustrations are due to the camera of E. W. Harnden of Boston.

The Geological Note is by Prof. A. P. Coleman, President of the Alpine Club of Canada.

The botanical notes and accompanying illustrations are by Mrs. J. W. Henshaw, of Vancouver, authoress of "Mountain Wild Flowers of Canada." Notes on trees and flowers, on the animals, birds, and fish are from Professor John Macoun, Dominion Naturalist. To one and all of these public benefactors we tender our most sincere thanks for their great kindness.

On board Steamer "Venture" going North.

April 30th, 1911. Arthur O. Wheeler.

"ONE WORD MORE."

Perhaps it is not too much to say that no guide book was ever prepared with so much heart and haste as this Guide to the Selkirks. Mr. Wheeler's heart is there. He has travelled every foot of the mountaineering regions radiating from Glacier, for which he provided the data. He knows the country, loving it zealously, and his collaborator, who merely knows well the easy regions contiguous to Glacier House, had not wrought long with the data and studied his book "The Selkirk Range" ere she, too, was working *con amore* and had learned the secret of Mr. Wheeler's thrall to these mountains. When the visitor, who may or may not come again to Glacier House, thinks of the Selkirks in terms of the Sir Donald Range, the Hermit Range, the Illecillewaet Glacier and the Asulkan, Mr. Wheeler and the men who have literally lived in the ranges south of the sky-line, think of an extensive ice-world beyond and the rich forests below it. For what crudeness and what errors concerning this region the book may possibly contain, the fault is partly owing to the haste of preparation, the data only beginning to get itself in shape in February, partly to the redactor's topographical stupidity; and partly to the 1600 miles separating Sidney, Vancouver Island, from Winnipeg. All the material dealing with the section "Glacier" was carefully prepared by Mr. Wheeler, and in expanding the text, she often used his own words. She hopes that no perversion of arithmetic nor wrong impression has crept into the text by means of the pen so generously over-rated by her collaborator.

Concerning those sections dealing with Golden and the Windermere Country, and with Revelstoke and its region, it is not now possible to prepare an adequate or absolutely correct guide book. Much remains to be done by the topographer and the researcher, ere sufficient material will be available for the redactor. Nevertheless, we hope that this little book will be useful to pilgrims and climbers in those parts also.

ELIZABETH PARKER.

Winnipeg, May 17, 1911.

THE SNOWY SELKIRKS.

"Every side my glance was bent
O'er the grandeur and the beauty lavished through the whole ascent.
Ledge by ledge, outbroke new marvels, now minute and now immense:
Earth's most exquisite disclosure, Heaven's own God in evidence."
La Saisiaz

The Selkirk Mountains have their own lovers to whom no snows are so white as the Selkirk snows and no clouds so radiant, no forests so darkly beautifully green. There the cedar, hemlock, fir, spruce, grow together in the rich valleys, climbing in serried ranks to meet the blue ice, softening every sharp outline to a gentle undulation. There hang myriads of glaciers festooning the high mountain walls, and there the curved mounds and cornices of driven snow beautify the harsh mountain-faces. And there, if the pilgrim only travel far enough, whole summits are white against the blue sky, grey rock scarcely showing above the green forest. For, from the Railway and the hotel, you see but a strip of the Selkirks. It is the place to absorb the phenomena of alpine beauty in forest and snow; the place to study the phenomena of alpine structures and alpine vegetation. Nor is that rainbow-edged phenomenon, the "Spectre of the Brocken" wanting.

It is not that the Selkirks are really more beautiful than the Rockies; it is only that they are differently beautiful. In all mountain ranges, the human association counts for much, and that was a true word of Sir Leslie Stephen's who said that the mountains retain every pure and tender emotion once associated with them. It is as true of mountains as of human landmarks in populous places of the earth. And I suppose this is how the Selkirks keep the first place in the hearts of those who know them well.

Though mountaineering as a sport began in the Selkirks some years before the now popular climbing regions of the Rockies began to be exploited, of late years the public hears less of these ranges so lavishly clad with forest and so heavily weighted with ice, and more of those barer but very beautiful regions about Lakes Louise, Moraine, and O'Hara—more about the Yoho Valley and the Waputehk Snowfields. In truth these splendid ranges lying beyond the Asulkan and Illecillewaet Neves exploited in the late eighties and early nineties and afterwards surveyed and mapped by Mr. Wheeler, have been very little climbed. It seems as though the Railway Company has encouraged travellers to tarry or even to halt at the centres in the Rockies rather than at Glacier House. There should be no rivalry, say between two such strategic mountain places as Lake Louise and Glacier. Each has its own superb alpine charms; each provides sumptuous climbing. (Dear tourist, the adjective belongs solely to the mountains.) Had both Government and Railway Company spent as much money on roads and accommodation at Glacier as at Lake Louise; and had the attractions of the Selkirks been emphasized proportionately, it might have been that Glacier House to-day were as large as the Chalet at Lake Louise. Many travellers leaving but a day at the end of the

holiday for Glacier have regretted that they had not known about the extreme beauty of the place and so had arranged for a longer visit. Verily, a season's round in the Canadian Alps is incomplete without a proportionate visit to the Selkirks and concomitant climbing—if the visitor be a climber.

Hitherto there has been no driveway, though several excellent trails for walking; but a beginning is made in the carriage road up the Cougar Valley. And, ere many years pass, roads will doubtless be built up Rogers Pass and Bear Creek. Indeed, my prophetic eyes see a roadway up the long beautiful Beaver Valley with here and there a comfortable little Chalet, where now (1911) the outfitter would be grateful for a decent pony-trail.

For multitudes are coming to this alpine playground within the great arc of the Columbia River. This trail of the Beaver Valley will be rebuilt; and many an old trail, blazed by the prospector and woodsman and long since abandoned, will again respond to the human foot and the tread of the pack-train. When the Selkirk jungle is cleared away from the narrow path, the newcomer, albeit a common-place globe-trotter and quite inferior in interest and picturesqueness to those earlier, ruder treaders of the trail whose goal was some fabulous eldorado, will be travelling that hidden way for pleasure only. May the day never come in the Selkirks when the pack-train will cease; and the guide of the valleys be driven to earn his bread in less picturesque, less romantic, less hospitable ways; and the diamond-hitch fade to a tradition. A day of such travel in the cool penetralia of these almost tropical forests is better than a thousand by luxurious utilitarian ways of transit. To a healthy soul, its very discomforts are enjoyable and preferable to the conveniences of the private car.

Happily there still remains at Glacier House an outfitter whom to travel with is an education—S. H. Baker, F.R.G.S., a well-learned man who has been about the world a good deal and settled in the Selkirks because he liked life in the forest. In the Rockies there was once a choice group of packers and guides of the lower altitudes, good hunters and horsemen. And they were a real asset to the mountain country. Had Robert Louis Stevenson but once found his way to the heart of the Canadian Rockies, perhaps he had been alive to-day. Certainly he had found company to his taste on the trail and around the camp-fire among the men in fringed buckskin. And Rocky Mountain literature had been richer this day. I am very sure he had made friends with "Fritz"—that splendid dog who climbed a dozen high peaks and was killed by a glacier at last—and had placed him in letters with his peers, Rab and Stickeen. Open-hearted, manly fellows with a strong, silent love of the mountains, these outfitters were; rough, not rude, full of yarns and dry humour, and with a fine sense of that highland hospitality than which Burns wanted none better in heaven. Their patrons were their guests; there was no touch of servility in their service, but there was civility and responsibility and goodwill; and when the foldskirts of the tent were fastened at night, the sleepers fell to sleep with a pleasant sense of security and cameraderie. But the time came when nearly all of these fine fellows were driven far north to other fields, or driven out of business altogether: and it is a distinct loss.

The diamond-hitch which, they say, had its origin in Mexico over a century ago, is an essential quantity in a packer's education. In the early days of outfitting, as much as $100 has been paid to learn the trick. Certainly necessity was its mother. It is a wonder the Arabs never contrived some such occult process instead of packing the camels by winding thongs about the body and over the pack, at the journey's end cutting all loose. The diamond-hitch is a combination of loops and turns and pulls of the rope which fastens the pack to the saddle, and is so constructed as to hold it firmly and comfortably in place through the day's march and, by a dexterous turn or two of the packer's knowing fingers, to loosen and set free the pack at night. Under the diamond-shaped figure made by the rope when completed, nothing can dislodge the pack. Bronchos have rolled down precipices or have fallen inversely into deep torrents, emerging with the pack precisely in its place and resuming a broncho's wonted philosophic complacence. In his famous and delightful "Travels with a Donkey," Stevenson, searching for health in the mountains of Cevennes, had been spared much trouble and chagrin, had he known this western trick, and there would have been no complaint about holding his pack upon a pack-saddle "against a gale out of the freezing north." If only, as I said, that beloved vagabond, fighting insidious and determined death, had been ordered west instead of south. Then we still had had his brave and beautiful essay "Ordered South," but with a different title.

Now that the Alpine Club has given such an impetus to mountaineering in Canada, the Selkirk Mountains will receive increasing attention; and that unmeasured and practically unknown field which borders the Windermere country, where glaciers and excellent waggon-roads almost meet, promises unrivalled sport for the climber whose holidays are short, to whom easy access is a grateful feature. It is through these hard working Canadians that mountaineering may become a national sport, that is, a sport for the many and not for the few only. The utilitarian uses of mountains are obvious; without them there is no growing of wheat on the prairie. Their aesthetic and ethical uses are obvious also—to those who climb them or tarry in their recesses. As the sea to the swimmer so is the mountain to the climber, and a passion for high altitudes has indubitably a moral quality. The day has gone by when ridicule was the climber's portion, albeit it never greatly disturbed him. His apologetic was to go on climbing. To be sure, in the Swiss Alps the loss of life has been enormous, notably after the revival of mountaineering in the late seventies, accounted almost wholly to foolhardiness and guideless climbing. In the Rocky Mountains it has not been so. For, in the twenty-five years of climbing, only three tragedies have occurred, one being in the Selkirks. With intelligence and care and the employment of capable and trusty guides, a novice is as safe on glacier or cliff as on our congested city streets.

Much has been written about the advantages and the joys of mountaineering, but the great inducement is, more than all other inducements, the unimaginable visions that unfold before the climber as he climbs. No man (and the word includes woman) can climb above these forests and over these glaciers, measuring these peaks with their own footsteps, without becoming thrall to the snowy Selkirks.

ELIZABETH PARKER.

CHAPTER I.

THE ROCKY MOUNTAINS OF CANADA.

The Canadian Rocky Mountain system, covering an area of 200,000 square miles, extends from the Eastern Foothills to the Pacific Coast, 600 miles, and from the 49th parallel towards the Arctic, 1,000 miles, about as far north as a man can win. It is part of the North American Cordilleras and is subdivided into four great ranges: the Rockies, the Selkirks, the Gold, and the Pacific Coast Ranges. Of these, the Rockies and the Selkirks are the greatest. Within all this vast mountain region are resources to sustain a large population—agriculture, forests, mines, fisheries; resources of health—mineral springs, remote valleys without number where tents or chalets may be set up and where transportation is by broncho and pack-train; resources of sport—hunting, fishing, mountaineering.

The early history of the Canadian Rocky Mountains holds stories, written in reliable journals, of high and hardy and desperate adventure—adventure as dangerous as any story of any Norseman of old. All the earliest explorers were fur traders, and the oldest human landmarks in the Rocky Mountains were their trading posts. The wonder to us who travel by the splendid highway chosen by the Canadian Pacific Railway is that for well nigh a century after Sir Alexander MacKenzie in 1793 crossed the Great Divide beyond the sources of the Peace River, no way was known from eastern foothills to western slopes except those paths discovered north and discovered south. Even in the middle of the century following, when Simpson and Palliser and Hector, penetrating the Rockies from the east, reached the Bow River in the vicinity of the present village of Banff, they did not seem curious to follow the wide valley upward, but turned south following Indian trails, one towards Simpson Pass, one towards Kananaskis Pass, and another towards Vermilion Pass each his own discovery. When Hector discovered the Kicking Horse River, he was beyond the Great Divide, having followed the route he found to the south of the beautiful glacier-bearing region lying about Lake Louise that forms a group of the Summit Range.

Before ever a white man saw the Rockies, the Indians had called them the Shining Mountains, and afterwards the Stony Mountains. The first white men to look upon them and to stand within their shadow were French Canadians, though it is an anachronism to call them so. On New Year's Day, 1743, Francis and Pierre, two sons of De la Verendrye, a French nobleman born at Three Rivers in 1686, saw the grey skyline of the Bighorn Mountains, south of the parallel of latitude one day to mark the international boundary. Two weeks later Pierre was at the foot of the main range, eager to cross it and seek beyond, the western sea; but, owing to the defection of his Indian guides he was compelled to retrace his steps towards the Assiniboine River from which he had set out. It had been the elder De Verendrye's purpose to find the fabled narrow sea supposed to separate the valley of the Great Forked River (the Mississippi) and China. A soldier who had fought in the New World and in the Old, he had returned to New France filled with a passion for discovery, bent on adding new territory to the French Crown. Disasters stopped his discoveries ere reaching the Rockies, but he was

first to explore the Valley of the Assiniboine and to visit the Missouri plains north. There was, therefore, poetic destiny in the discovery by his two brave sons, one of them coming into the very foothills.

Exactly half a century later, MacKenzie, the Scotsman, treading down dangers of savage nature and savage men linked together against him, was the first white man to cross the Rocky Mountains, reaching the Pacific Ocean on July 22nd, 1793, at a place on the Coast in the region of Prince Rupert, the modern transmontane terminus of the Grand Trunk Pacific Railway. Had commerce but consulted the stars, this town would have been called by his name. Poetic justice in nomenclature is due to the great pathfinders; and a city named MacKenzie was his due who made the first overland journey across the Continent from Ocean to Ocean, just as the name MacKenzie River was his who first navigated its waters to the Arctic Sea.

Among others to follow in the interests of the fur-trading companies of that time were Simon Fraser, who discovered the Fraser River in 1809; David Thompson, who discovered Howse Pass; and Ross Cox, who ascended the Columbia in 1817 and crossed the Athabasca Pass. Ten years later came David Douglas, the first explorer in the sole interest of science. He was a botanist and his name is perpetuated in the Douglas fir tree, and not in Mount Douglas that giant north of Laggan that so long defied the hardiest climbers. Douglas reached Athabasca Pass in 1827 and halted to exploit two mountains on either side which he named Mt. Brown and Mt. Hooker and to which he gave the fabulous and long credited altitudes of 16,000 and 17,000 ft. When measured by Professor Coleman in 1892 these high figures were reduced to some 9,000 and 10,000 feet respectively. Between them lies a lakelet*about 20 feet in diameter, which Douglas's party judged to be 20 yards across and named the "Committee's Punch Bowl." And who could expect sober arithmetic over that appellation? The name remains to this day.

The next eminent pathfinder, one of the Fur Traders, came in 1841, travelling with a cavalcade of forty-five horses strength and making speedy and luxurious progress. This was Sir George Simpson, Governor of the Hudson's Bay Company, who entered the Rockies through the defile now called Devil's Gap, north of the Gap entered by the C. P. Railway. Piloted by Peechee, a Cree Chief, this imposing company followed an Indian trail through the forest stopping by a large and beautiful lake set in high mountains which Simpson named Peechee. This is our Lake Minnewanka, a favorite haunt of tourists; and Peechee's memory lives in the name of an overlooking mountain. Could we know the exact spot of this historic camp, some memorial of native stone would be a grateful remembrance. Simpson's progress to the Bow River across the Cascade River and up the valley past Cascade Mountain and admiring the stream issuing from its side and falling like a silver ribbon to its foot, is a pretty story. Goat and sheep were clambering about the mountains. They camped on the right bank of the Bow, horses and all crossing on a raft covered with willows. Instead of ascending the Bow valley, Simpson turned south by Healey's Creek, ascending the tributary valley and traversing the Pass which received

*Professor Coleman's book on "The Canadian Rockies," published since the above was written, gives this lake's length as 200 yards.

his name, and so crossed the watershed and pushed on towards the Columbia and the Kootenay.

The next notable traveller came in 1845, crossing the watershed of White Man's Pass south of Mt. Assiniboine. It was Father De Smet, the Jesuit Missionary journeying from his Missions recently established in the Kootenay Valley, to minister also to the spiritual needs of the Indians along the eastern foothills of the Rockies. On the summit of White Man's Pass he set up a wooden cross which he called the "Cross of Peace." When the late Dr. G. M. Dawson explored the Pass, an Indian showed him the spot where the cross had once stood. This is the circumstantial evidence to prove De Smet's route eastward, his book "Oregon Missions and Travels over the Rocky Mountains 1845-6" giving no records of the route travelled. But there seems to be no doubt that from White Man's Pass De Smet descended the little Spray River to the Bow Valley on his way to the encampment of Assiniboines at a place in the foothills near the present village of Morley, the headquarters of the Methodist Mission. De Smet spent sometime at this place preaching and baptising, then journeying north to the Hudson's Bay Post at Edmonton where he continued his missionary labours until spring, recrossing the mountains via the Athabasca Pass. This is the only transmontane journey for religion's sake in the early history of the Canadian Rockies.

And now, in 1846, the year of the Jesuit Father's return, there came a traveller for art's sake who made a round journey, as thrilling and as picturesque as any in the history of the Canadian Mountains. Paul Kane, who is to Canada what George Catlin is to the United States, travelled in that year from Toronto to Fort Vancouver, a post of the Hudson's Bay Co. on the Columbia River, 100 miles from its outer ocean-bar. His object was to record in paint what the pioneers recorded in ink; and he carried back with him over 300 oil sketches of the Indians and Indian life, of the buffalo, of Hudson's Bay trading posts, and many a bit of landscape besides.

In 1858 came several exploring parties belonging to Captain Palliser's expedition sent out by the British Government to find one or more practicable passes south of the pass between Mt. Brown and Mt. Hooker (Athabasca Pass) over the Rocky Mountains. In other words, it was to search for some shortest and easiest route for a possible railway. Palliser's official journal contains in detail the story of these most important explorations, and there is not one dull page in it. But it is a very scarce book. The most lucid synopsis in any modern book found by the writer is in "The Selkirk Range."

By far the most interesting and most fruitful discoveries were made by that section of the expedition led by Dr. James Hector, the geologist. Hector ascended the Bow Valley passing Cascade Mt., called by the Indians "the place where the water falls," to Castle Mt. where he crossed the Bow, turned south and followed a stream (Little Vermillion Creek) to the height of land, Vermillion Pass; descended Vermillion River to its junction with the Kootenay, turned north towards the Kootenay's headwaters; and portaged to the Beaverfoot River which he followed to its confluence with the Kick-

ing Horse. This important river of his discovery he so named from a serious accident of that kind to himself at the time and the place. Various legends obtain concerning the origin of this curious name, but Hector tells how he was laid up by a kick from one of the pack-horses, and how hunger alone spurred him on after one day's delay. Now turning eastward he ascended the Kicking Horse Valley, crossing the Great Divide to the Bow Valley scarcely 25 miles west of his halting place at Castle Mountain while travelling westward. He had come a long way round but he had discovered that high wide pass where a granite monument now stands to his memory.

The next year, starting from Old Bow Fort at the eastern wall of the Rockies, Hector followed the Bow River to Pipestone Creek which he explored, crossing Pipestone Pass to the Siffleur River and on to the North Saskatchewan; then across Howse Pass to the Blaeberry River, proceeding to the Columbia Valley. It is interesting to note in Hector's reports which are incorporated in Palliser's Journals, that so early as 1858 the following well known mountains were already named: Ball, Goodsir, Vaux, Lefroy, Balfour, Forbes.

The year following Hector's second traverse of the lower Bow Valley, Lord Southesk and his party travelled that way and passed the site of his camp, reading the inscription on a tree: "Exploring Expedition, August 23, 1859. Dr. Hector." His name is now affixed to a mountain, a lake and a station. It is a place-name familiar to all visitors; also Palliser's and that of M. Bourgeau who was the botanist of the Expedition and for whom Bourgeau Mountain is named. Bourgeau secured a valuable collection of alpine plants. Dr. Hector received a knighthood for his services to geographical and geological science. He revisited the Rockies in later years and died in New Zealand

The next notable expedition to cross the Rockies was one led by Viscount Milton and Dr. Cheadle in 1862. They entered by way of Jasper House and the Athabasca River but crossed the Divide over the Yellow Head Pass some 60 miles north of the Athabasca Pass. The object of their expedition was to find a direct route by British territory to the far-famed goldfields of Cariboo in the heart of the British Columbian mountains. Their book makes interesting reading to-day when these wide northern valleys are being so successfully exploited. Other travellers penetrated the fastnesses of the Rockies, but no outstanding journeys were made until the movement was on foot for the first Canadian Transcontinental railway.

THE SELKIRKS.

Geographical Position: The Selkirk Mountains, noted for splendour of alpine scenery, form a section of the Canadian Rocky Mountains belonging to the great North American Cordilleras, which stretch from Mexico to the Arctic Ocean.

The Selkirks themselves constitute an immense mountain system over 300 miles long, of interlocking ranges some 400 miles inland from the Pacific Coast. They are richly forested, vegetation being almost tropical in its rank growth, and bear innumerable

snowfields and glaciers. They are ages older than the eastern or higher range and were once the crest of the chain "rearing their serrated and snow-capped summits above the prehistoric ocean when their neighbours, the Rockies, were as yet unborn beneath its ice-bound bosom." When in the long geologic processes of fires and earthquakes and floods that went to the making of this planet, the giant ages upheaved the enormous chain of mountains which forms the main range, and shifted the continental divide eastward, they "relegated the Selkirks to a subordinate position and left only their older archaean formation to tell the tale." (A. O. Wheeler's "Selkirk Range.") Geology, says Tennyson, is a terrible muse, singing of past aeons when the earth was "manless and forlorn." Yet in rock and soil she tells a wonderful story. In these Selkirks, the witness of mountain and valley and of a mighty encompassing river, is a testimony written on rock and soil and flood in aeonian terms—"Aeonian music measuring out the steps of Time." Persons interested in Geology will find the Selkirks a rare and delightful play-ground for investigation. There is no geological field in the world providing more enchanting scenery, more charming excursions.

The Selkirks occupy the loop made by the Columbia River in the first 600 miles of its course. Rising in Columbia Lake over 100 miles south of the Railway, the river flows north some 300 miles, when, not far from Athabasca Pass, the historical portage of the early fur-traders, it turns again, making the "Big Bend" and, 300 miles south, joins the Kootenay which forms the southern portion of the Eastern boundary and the whole of the southern. Though the extent of the Selkirk Range below the 49th parallel is a matter of doubt, it is generally assumed that either wholly or partially, the Kootenay River defines the southern limit.

The Columbia is one of the longest rivers in the world. After finally leaving the Selkirks, it still flows 800 miles to the ocean. Its relation to the Kootenay is a geographical phenomenon attracting the interest of all visitors to the upper Columbia Valley where both rivers have their sources. The Kootenay rises in a small lake on the western flank of the Rockies some miles south of the source of the Columbia, and the rivers, almost parallel during the first part of their journey, flow in opposite directions. An almost level plain, a mile and a quarter wide, separates them near Columbia Lake. Indeed the two rivers are here joined by a canal, now unused. This strange trick of nature is accounted for by a tilt in the mountain range. Far south in Idaho, the Kootenay makes a curve similar to the Columbia's far northern bend and both rivers meet and mingle near the international boundary at Arrow Lakes. Therefore, the Selkirks are practically a huge inland island of forest, rock, ice and snow.

Origin of Name: The first general map on which the Selkirk Mountains appear was made in the years 1813 and 1814 by David Thompson, for the North-West Fur Company. It is a map of genuine historical interest. The result of twenty years' surveys and discoveries (from 1792 to 1812); covering an enormous extent of territory embracing fifteen degrees of latitude and forty degrees of longitude (roughly from Lake Superior to the Pacific Ocean and from the headwaters of the Mississippi to the vicinity of Great

Slave Lake); and made by one topographer, Thompson's map is a wonderful achievement. Though inevitably sparse and incorrect in detail, it is in the main, accurate. A reprint of that portion covering the mountains is published in the "Selkirk Range." British Columbia was then called New Caledonia, so named by Simon Fraser of the North-West Fur Company, the discoverer of Fraser River and one of the more notable of the earlier explorers.

On Thompson's map, the Selkirks are called Nelson's Mountains. When we remember that Trafalgar was fought in 1805 and that Nelson's thrilling signal was still ringing in the ears of Englishmen, the name is obvious. Subsequently, when the North-West Fur Company and the Hudson's Bay Company amalgamated, the name was changed to Selkirk Mountains in honour of the Earl of Selkirk, the great and famous member of the Hudson's Bay Company and founder of that Selkirk Colony on the Red River known as "Britain's one Utopia."

Historical—Early Explorers:. David Thompson was the earliest pathfinder of the Selkirks and the first white man to make the inland voyage, 1,400 miles long from the Columbia River's source to its mouth. It was not in one year nor in one journey, but he explored the great waterway throughout its long, slow, devious length. He first reached the River (it is worthy to be spelt with a capital) in 1807 by way of Howse Pass, north of the railway. How he happened to go upstream instead of downstream when his objective point was the Pacific Ocean, Miss A. C. Laut tells in her "Conquest of the North-West." On June 22, 1807, having come to the River, he wrote in his journal: "May God in His mercy give me to see where the waters of this river flow to the Western Ocean." If he goes north, says Miss Laut, he knows from what the Indians tell him that he will come to an enormous detour. It is the Big Bend around the Selkirks north. But he is in a hurry, and it seems to him that he will reach the western ocean sooner "where American traders are heading," if he ascend the River. This is how Thompson came to spend the winter of 1807-8 near the beautiful lake now called Windermere and to build a wooden fort there which he named "Kootenae House." It was not until his return in 1811 that he followed the River south to its source in Columbia Lake. He named both lakes "the Kootenae Lakes" and the Kootenay River he called McGillivray's River. Between these two visits, Thompson was indefatigable in extending the operations of his Company. His ascent in 1810 of the Athabasca River to its source and the descent of Wood River to its junction with the Columbia near the mouth of Canoe River which he named and where he established a post called "Boat Encampment," made known the route by the Athabasca Pass, which became the highway of early trade and the bridge of the dividing mountains between the vast plains east and the mountainous territories west.

Thompson never received recognition for services of exploration as great and more valuable than those of Sir Alexander MacKenzie who first navigated the MacKenzie River to the Arctic Ocean and first traversed the Rockies to Northern Pacific waters. He was, says Mr. J. B. Tyrrell, who is preparing the first biography of this pathfinder of the Selkirks, the greatest land geographer the British race

has produced. And his career, from a Charity School in London to an obscure death in poverty at the great age of eighty-seven in a village near Montreal, is one of the most remarkable and romantic in the annals of the great geographers. He entered the service of the Hudson's Bay Company in 1789, exploring and surveying the Nelson, Churchill, Athabasca, Peace and Saskatchewan Rivers. In 1797 he went over to its great rival, the North-West Fur Company as geographer and astronomer, and in 1800 first entered the Rocky Mountains in latitude 51, probably near the Pass followed by the C. P. Railway. Thompson discovered the source of the Mississippi in 1814. In 1816 he was appointed by the British Government astronomer and surveyor to define the boundary line between British North America and the United States. Nine years were occupied in this international survey, and the maps then made are still and will always be the ultimate authority on the line dividing the two nations, from the State of Maine to the north-west angle of Lake of the Woods. Thompson married a "Child of the Western Country."

There were other outstanding explorers to cross the Great Divide far north of the C.P.R. highway or south of it, and to navigate at least a portion of the great river surrounding the Selkirks. Notable among them was Alexander Henry of the North-West Fur Company, sometime companion of Thompson in his travels. He was drowned in the lower reaches of the Columbia in 1814. His journals appear in Dr. Elliott Coues's book. Many of these travellers were in the employ of the Fur Companies, notably Sir George Simpson, Governor of the Hudson's Bay Company, whose progress through the mountains was both imposing and speedy, his cavalcade making at least forty miles a day. Ross Cox's ill-fated expedition of 1817, consisting of eighty-six persons of various nationalities, which proceeded from Astoria, a fur trading post at the mouth of the Columbia, to Athabasca Pass, is one of the tragedies of the river.

A picturesque traveller of the forties was Father de Smet, the devoted Jesuit missionary called "Black Robe" by the Indians. De Smet paddled the river in the Kootenay region where his missions were, and crossed the Great Divide south over the White Man's Pass in 1845, to preach the gospel to the tribes along the eastern Foothills. He returned to the Kootenay Missions by way of Athabasca Pass and the Columbia. His are the only early transmontane travels in the interest of religion.

The next traveller to skirt the Selkirks by the waters of the Columbia was Paul Kane in 1846, who came in the interest of art. His story is written in a scarce book sure to be reprinted, "Wanderings of an Artist among the Indians of North America." Its title, as was the way with titles in the early and middle nineteenth century, is more cumbersome still. Here is the rest of it: "From Canada to Vancouver's Island and Oregon, through the Hudson's Bay Company's Territories and back again." The record in this volume of the inland voyage of the Columbia has a touch of epic in it. Kane went down the River from the Big Bend to Fort Vancouver in Oregon (roughly 1,100 miles by its windings) in fifteen days. And the reader will concede that the voyage itself was epic whether the story of it was epic or no. The return voyage upstream occupied four strenuous months. Kane was that artist who crossed the

Continent from Toronto for the purpose of putting on canvass aboriginal scenes of the various tribes of Indians, of the buffalo, and such human marks of pioneers as the forts of the great Fur Trading Companies. He brought back to Toronto some 300 rough sketches. Some of his finished pictures are now in the Parliament Buildings of Ottawa and of Toronto, some are in private collections; but all or nearly all of the original sketches are in the possession of the artist's son, who lives in a small town in Manitoba. Their historical value is considerable and any Western Province would do well to secure them. Kane lost his eyesight and his painting was stopped.

Other early explorers might be mentioned, but these belong especially to the great days of adventure and heroic transit, now picturesquely placed by the perspective of the years. In the "Selkirk Range" Mr. Wheeler gives us a touch of their glamour, and yet a glamour not theirs but ours: "Often have the recesses of these mountain fastnesses echoed to the stirring strains of a French-Canadian camp song; and the camp-fire, flickering among the dark shadows of the pines, has lighted up the bronzed and strikingly characteristic features of bourgeois voyageur and redskin men who lived hand in hand with nature, to whom the trackless forest was an open book and the surging rapids an everyday pastime."

Later History: Modern discovery and Exploration began in the Selkirks in 1865, under Mr. Walter Moberly, an eminent engineer who came to Vancouver Island in 1858 by way of Cape Horn, his ulterior purpose being to search for the shortest low-level route through the Rocky Mountain system. A man of vision, he saw the day when the mountains would no longer separate east and west in Canada, when men would ride to and fro on a trans-continental railway. Mr. Moberly's career is part and parcel of the history of the great railway's advent, and in itself is a record of historic importance. The reader is recommended to a scarce little book of thrilling interest entitled "The Rocks and Rivers of British Columbia," published in London (1885) containing an account of his pathfinding north and south by flood and precipice and jungle in savage wildernesses.

Mr. Moberly discovered Eagle Pass, explored the Illecillewaet to its forks, crossed the Selkirks for the first time by a pass north of Rogers Pass, examined the route around the Big Bend, and made many explorations of value both to the C.P.R. Company and to the British Columbia Government. Only for the refusal of the Indians owing to the advancing season to proceed beyond the junction up the south fork of the Illecillewaet (he chose the name meaning "rapid river") Mr. Moberly had discovered Rogers Pass. This achievement, as everybody knows, came to Major Rogers. It is interesting to learn that Paul Kane was the begetter of Mr. Moberly's inspiration and determination to explore the western mountains. The artist gave him long and minute descriptions of his tour, literally a grand tour, and showed him all his sketches; and there was born the purpose, carried out under many and heavy difficulties.

The Railway—Discovery of Rogers Pass (1881). The key which unlocked the door to tourist travel in the Selkirks was the discovery of Rogers' Pass by Major Rogers, engineer in charge of the mountain division of the Canadian Pacific Railway from 1880 to 1885. His

soubriquet in railway circles was "The Railway Pathfinder;" and some of that company who blazed the trails and measured the valleys were wont to speak of him affectionately as the "swearing Major."

From its inception in 1871 until 1880, explorations and surveys for the railway were carried on by the Dominion Government, with Mr. (now Sir) Sandford Fleming in charge as Chief Engineer. It was proposed to cross the main divide by the Yellow Head Pass. But in 1880 a radical change was made and the enterprise transferred to a private syndicate. Its promoters were: Mr. George Stephen (now Lord Mountstephen), Mr. Donald Smith (now Lord Strathcona and Mount Royal), Mr. James J. Hill and others. Mr. W. C. Van Horne (now Sir William Van Horne, K.C.M.G.), was appointed general manager and Major A. B. Rogers engineer in charge of the mountain division.

The decision of the new Company to find a more southerly route led to an examination of the Bow River and Kicking Horse Passes and the valley of the Columbia River. Mr. Moberly had already established the accessibility of the Eagle Pass through the Gold Range and of the Columbia Valley north round the Big Bend. But this entailed an enormous distance, whereas an air-line across the Selkirks was only 60 miles. Hence every effort was made to find a more direct line through these apparently impenetrable Selkirks.

Major Rogers was a man of few words but vast practical energy. He lost little time in getting into action, and in April, 1881, commenced his famous expedition across the Selkirks which resulted in finding the pass that bears his name. In "The Selkirk Range," appendix E, an interesting account of the expedition is given, written by Albert Rogers, nephew of the Major, who accompanied him. The expedition was made from Kamloops to the Columbia River across the Gold Range and then up the Illecillewaet River to the summit of the Selkirk Range, with ten strapping Indians to carry the necessary supplies. The following extracts from the story will give some idea of the difficulties encountered. "Although at this season the days were very long and we travelled from early till late, we were five days making sixteen miles and arrived at the Forks of the Illecillewaet which was the farthest point white man had ever reached. (Walter Moberly, 1865). Our course was up the east fork and, one mile and a half from its mouth, we came to a most wonderful box canyon or gorge, which three years later was named by the Rev. George M. Grant—Albert Canyon—in honour of the writer. There must have been heavy snows in the mountains the preceding winter, for snow on the level was several feet in depth in shaded places, and the next five days our course was across avalanches, some of which had started from the very peaks and had left a clean path behind them, crushing the timber into matchwood for several hundred feet on the opposite sides of the mountains. We crossed several snow-bridges, under which the river passed, which were one hundred and fifty feet above the river's bed.

"On May 27th, we found snow in the valley about five feet on the level and, it being too soft to hold us, we waded the river most of the day.....On the 28th of May, we came to where the stream seemed to fork and in front of us appeared the backbone or main range of the Selkirks. The whole success of our trip and the

possibility of getting a direct route for this great national thoroughfare depended upon the gateways that might be at the head of either of these streams.

"At the forks we decided to cache everything that would impede travel and make a hurried trip up the north fork to the summit. .....In a short time we were able to cross the summit and convince ourselves that the water divided here, running east and west.

"After checking our barometer readings and mapping the course of the valleys, we decided to climb the mountains on the south side of the pass to get a better geographical idea of the country, as the timber in the valleys was very dense and obstructed the view.

"From the opening of the summit we had seen a strip of timber extending about halfway up the mountain between two snow slides, and decided to make our ascent at this point. Cutting each a good, tough, dry, fir stick and adjusting our light packs, we began to climb. Being gaunt as greyhounds, with lungs and muscles of the best, we soon reached timber-line, where the climbing became very difficult. We crawled along the ledges, getting a toe-hole here and a finger-hole there, keeping in the shade as much as possible and kicking toe-holes in the snow crust. When several hundred feet above the timber-line, we followed a narrow ledge around a point that was exposed to the sun. Four of the Indians in the lead had tied pack-straps to each other's belts in order to help over bad places. The leader had made several attempts to gain the ledge above by crawling on the soft snow, when suddenly by some awkward move he fell backward with such force as to miss the ledge upon which the other three stood, pulling them headlong after him. They fell some thirty feet straight down, striking upon a very steep incline. The snow being soft and their momentum so great, it was impossible to check their speed and they went rolling and tumbling, tangled up in their pack-straps, until they disappeared from view over another ledge. Our hearts were in our mouths, fearing the worst might have happened to them. Dead Indians were easily buried, but men with broken legs to be carried out through such a country and with barely food enough to take us back to the Columbia River on a forced march, made a problem which even strong men feared to face. Any one who has been a mountain climber knows that there are times when going down is a great deal more dangerous and difficult than going up. Slowly descending, we had nearly reached the timber-line when one of the Indians with an exclamation pointed to four black specks moving across a snow-slide far below. Our glasses were quickly turned on them. There they were and to our great relief all were on their pins making down the mountain as fast as possible. We had lost several hours of the best part of the day for climbing, but we had started [illegible] the top, and what Major Rogers purposed, that he performed. It was late in the evening when we reached the summit, very much exhausted.

"Such a view! Never to be forgotten! Our eyesight caromed from one bold peak to another for miles in all directions. The wind blew fiercely across the ridge and scuddy clouds were whirled in the eddies behind the great towering peaks of bare rock. Everything was covered with a shroud of white, giving the whole landscape the appearance of snow-clad desolation. Far beneath us was the timber-

line and in the valleys below the dense timber seemed but a narrow shadow which marked their course. We had no wood for a fire, no boughs for beds, were wet with perspiration and eating snow to quench our thirst—not a pleasant prospect for camp; but the grandeur of the view, sublime beyond conception, crowded out all thoughts of our discomforts.

"Standing upon a narrow ridge at that great elevation, mid Nature crowned by solitude, where a single false move would land one in the great beyond, man feels his weakness and realizes how small is human effort when compared with the evidences of Nature's forces.

"Crawling along this ridge we came to a small ledge protected from the wind by a great perpendicular rock. Here we decided to wait until the crust again formed on the snow and the morning light enabled us to travel. At ten o'clock it was still twilight on the peaks, but the valleys below were filled with deepest gloom. We wrapped ourselves in our blankets and nibbled at our dry meat and bannock, stamping our feet in the snow to keep them from freezing, and taking turns at whipping each other with pack straps to keep up circulation."

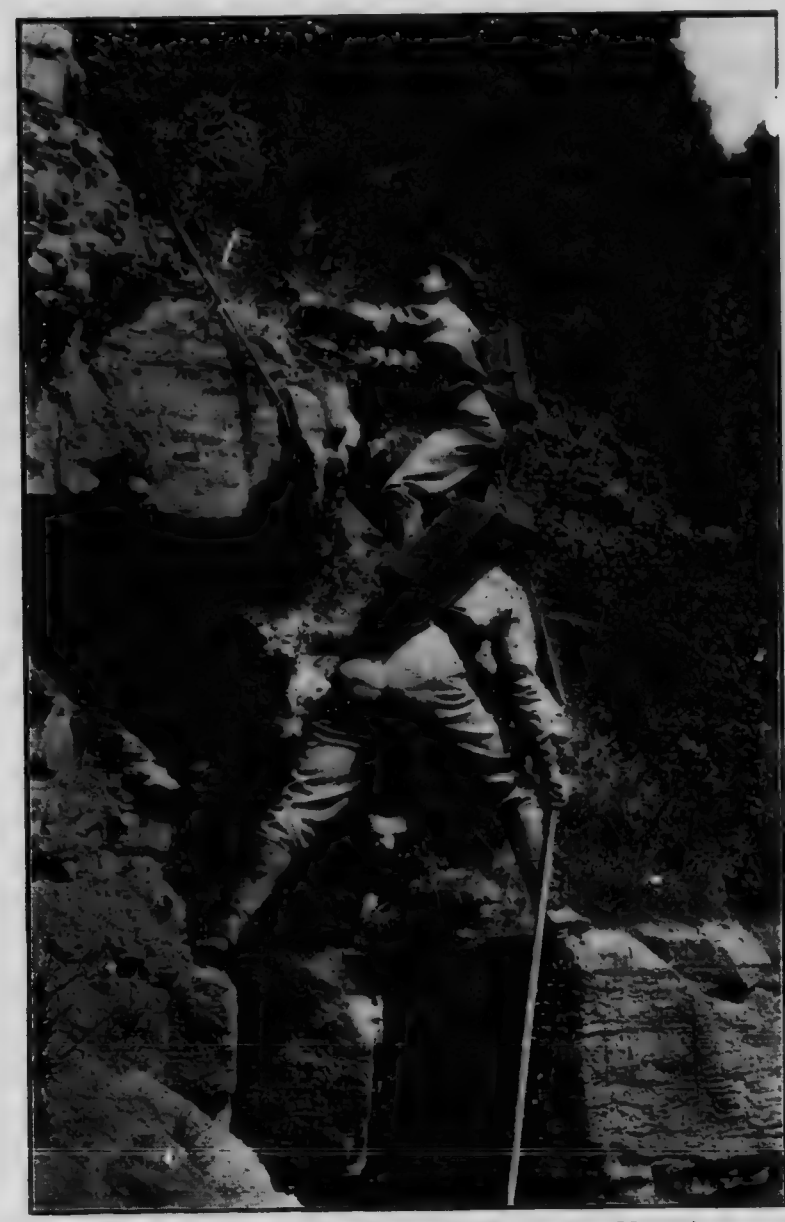
In the following year, 1882, the exploration was completed by ascending the Beaver River Valley, on the eastern slopes, to Bear Creek, a tributary stream; then up that stream, through the rugged defile between Mts. Macdonald and Tupper to the summit of the pass and over to the Illecillewaet Valley.

Thus was discovered the celebrated Rogers Pass and the present route of the C.P.R. located across the Selkirks, leading to the establishment of Glacier Station and Glacier House, one of the most popular and attractive of the Railway Company's many delightful tourist resorts.

The first Alpine Club of Canada (1883).—Two years after Major Rogers' successful expedition, the C.P.R. surveys had been carried through the pass; and in August of 1883 Sir Sandford Fleming, who had been chief engineer of the railway up to the time it passed into the hands of the syndicate, was induced as a railway expert to make an examination and report upon the proposed route through the mountains by way of the Kicking Horse and Rogers Passes. A graphic account of this expedition is found in Sir Sandford's book "England and Canada, a Summer Tour between Old and New Westminster," published in 1884. Two passages from it are quoted below, describing the arrival at the summit of Rogers Pass and the subsequent journey down the Illecillewaet river.

The first passage tells of the picturesque incident on the summit of Rogers Pass, the inspiration of a moment, when a Canadian Alpine Club was organized, a proposal made to climb the boldest virgin summit in sight, the club drinking its own health in a sparkling little stream—and so ending. More than one member of the Alpine Club has for high sentiment's sake, sought some stream in the vicinity and drank to the romantic memory of the first Canadian Club. This quaint expedition appealed to the mind and heart of Mr. Wheeler, the topographical historian of the Selkirks. He describes it: "Few people know that a Canadian Alpine Club was duly organized during the summer of 1883. The organization took place at

Mr. Walter Moberly, C.E.



Topographical Surveyor's taking their instruments up a Mountain

the most suitable of all spots, viz., at the summit of Rogers Pass. Here, seated upon a grassy knoll, amidst the very climax of Selkirk scenery, the meeting was held. What more appropriate! Around, in full view, are all the adjuncts that go to make alpine climbing of interest. The rugged black precipices of Mts. Macdonald and Tupper stand grim sentries over an apparently closed gateway. To the north and west the primeval forest rises to grassy alpine slopes decked with brilliant flowers; beyond are icy glaciers and fields of pure white, sloping gently to the curving ridges that lead upwards to rocky peaks capped with snow. The sharp-cut pyramid of "Cheops" is silhouetted in space; below, the "Little Corporal" stands at attention, on guard over the hazy blue vistas reaching into the south-west. Around are gently swaying spruce and not far distant a murmuring brook. Aloft, wrapt in silent meditation, the "Hermit" stands upon his ledge of rock and gazes for all time upon the m' 'vels of creation that surround him."

The account of the meeting is given in Sir Sandford Fleming's book: "The horses are still feeding and we have some time at our command. As we view the landscape, we feel as if some memorial should be preserved of our visit here, and we organize a Canadian Alpine Club. The writer, as a grandfather, is appointed interim president; Dr. Grant, secretary, and my son, S. Hall Fleming treasurer. A meeting was held and we turn to one of the springs rippling down to the Illecillewaet and drink success to the organization. Unanimously we carry resolutions of acknowledgment to Major Rogers, the discoverer of the pass, and to his nephew for assisting him. "The bold idea of climbing Mt. Sir Donald, then known as Syndicate Peak (so named by Major Rogers in 1881; subsequently re-named after Sir Donald A. Smith, now Lord Strathcona and Mount Royal) was conceived as a fitting virgin attempt of the Alpine Club, but the idea was not put into execution."

Leaving the summit, the party proceeds down the valley of the Illecillewaet. At a distance of fourteen miles, the last surveyor's camp is reached. Thenceforward it is the primeval wilderness of the Selkirks. Again quoting from Sir Sandford's account: "The walking is dreadful, we climb over and creep under fallen trees of good size, and then men show that they feel the weight of their burdens. Their halts for rest are frequent. It is hot work for all. The dropping rain from the bush and branches saturates us from above. Tall ferns, sometimes reaching to the shoulder, and devil's club, through which we had to climb our way, made us feel as if dragged through a horsepond and our perspiration is that of a Turkish bath. The devil's club may be numbered by millions and they are perpetually wounding us with their spikes, against which we strike.

"The rain continues falling incessantly. Although Sunday, owing to limited supplies, we are compelled to travel. We make little headway, and every tree, every leaf is wet and casts off rain. In a short time we are as drenched as the foliage. We have many fallen trees to climb over, and it is no slight matter to struggle over trees ten feet and upwards in diameter. We have rocks to ascend and descend; we have a marsh to cross in which we sink often to the middle. For half a mile we have waded, I will not say picked, our way to the opposite side through a channel filled with stagnant

water, having an odour long to be remembered. Skunk cabbage is here indigenous and is found in acres of stinking perfection. We clamber to the higher ground, hoping to find an easier advance, and we come upon the trail of a caribou, but it leads to the mountains. We try another course, only to become entangled in a windfall of prostrate trees. The rain continues falling; the men, with heavy loads on their backs, made heavier by the water which had soaked them, become completely disheartened, and at half-past two o'clock we decide to camp. Our travelling to-day extended only over three hours. We have only advanced about a mile and a half of actual distance and we all suffer greatly from fatigue. I question if our three days' march has carried us further than ten miles."

Members of the British Association Visit the Selkirks (1884)—William Spotswood Green, M.A., F.R.G.S., A.C., in the opening lines of his charming book "Among the Selkirk Glaciers," writes as follows: "When the British Association met in Canada in 1884 one of the most interesting excursions planned for the members was that provided by the Canadian Pacific Railway Company on the portion of their line then completed to the summit of Hector Pass, or as it was then called, the Kicking Horse Pass, in the Rocky Mountains. Among the members of that excursion were two gentlemen, Mr. Richard M. Barrington and the Rev. Henry Swanzy, who, not satisfied with the interesting scenes revealed to them by the completed portion of the railway, determined to continue the journey to the shores of the Pacific, with the aid of pack-horses. After separating from the excursion party on Hector Pass, they experienced very considerable difficulties. The temporary track for construction trains was available only as far as the Ottertail bridge on the western slopes of the Rockies. From this point they had to depend entirely on their horses. Having been ferried across the Columbia River, they followed a very imperfect trail up the valley of Beaver Creek, into the Selkirks and so reached Rogers Pass. Often missing the trail, they were compelled to make the best of their way along the precipitous mountain side, through tangled forest, until descending by the side of the Illecillewaet River they joined the Columbia in the more westerly portion of its course. They ferried once more across its waters and on its farther shore met the trail in the Gold Mountains, which they followed to the shores of Shuswap Lake. Here, taking the steamer to Kamloops, they finally reached the railway at Spence's Bridge in the valley of the Thompson, and so completed their journey to the Pacific."

Expedition (1885)—No sooner were the rails laid across Stony Creek bridge than Professor John Macoun, Dominion Naturalist and Botanist, accompanied by his son, were in the Selkirks. They arrived in August, 1885, before a through train had passed over the route. Glacier House was not then in existence and visitors of the present day cannot possibly imagine the tangle of brush, logs and fallen trees that filled the valley at that point. An expedition was made up the Asulkan Torrent, but the impenetrable bush and windfall proved too much for them. An ascent of the slopes of Mt. Avalanche revealed a bird's-eye view of the Illecillewaet Glacier. Ascents also were made to the Roger's Glacier and to the base of the Pyramid of Cheops.

The driving of the last spike (1885)—Sir Sandford Fleming, in an interesting paper, prepared for the Royal Society of Canada, entitled "Expeditions to the Pacific," describes the dramatic ceremony at Craigellachie—the driving of the last spike and the passage of the first through train over the Canadian Pacific Railway in 1885:—

"On the evening of October 27th, when the regular Winnipeg train left Montreal, a private car, the "Saskatchewan," was attached, with the design of proceeding to Port Moody, at that date the terminus, the new city of Vancouver having no existence. The car contained seven persons; five came the whole way from Montreal, one joined at Ottawa, and one on their way to Port Moody..... The train beyond Calgary became a "special" and reached the western crossing of the Columbia in fifty-six hours after leaving Winnipeg. The gap, however, was not closed; the work having been retarded by incessant rains, the train could not proceed farther. Early on the morning of the 7th the junction was verging to completion, and at 9 o'clock the last rail was laid in its place. All that remained to finish the work was to drive home one spike.

"By common consent the duty of performing the task was assigned to one of the four directors present, the senior in years and influence, whose high character placed him in prominence—Sir Donald Alexander Smith. No one could on such an occasion more worthily represent the Company or more appropriately give the finishing blows, which, in a national sense, were to complete the gigantic undertaking. (The other Directors present were Messrs. Van Horne, Harris and the writer.)

"Sir Donald Smith braced himself to the task, and he wielded the by no means light spike hammer with as good a will as a professional tracklayer. The work was carried on in silence. Nothing was heard but the reverberation of the blows struck by him. It was no ordinary occasion, the scene was in every respect noteworthy, from the group which composed it and the circumstances which had brought together so many human beings in this spot in the heart of the mountains, until recently an untracked solitude. Most of the engineers, with hundreds of workmen of all nationalities, who had been engaged in the mountains, were present. Every one appeared to be deeply impressed by what was going on. The central figure in the group was somewhat more than the representative of the Railway Company which had achieved the triumph he was consummating. His presence recalled memories of the Mackenzies and the McTavishes, the Stuarts and McGillivrays, the Frasers, Finlaysons and McLeods and McLoughlins and their contemporaries, who first penetrated the surrounding territory. From his youth he had been connected with the Company which for so long had carried on its operations successfully from Labrador to the Pacific, and from California to Alaska. To-day he was the chief representative of that vast organization which, before the close of the last century, had sent out pioneers to map out and occupy the unknown wilderness and which, as a trading association, is in the third century of its existence. All present were more or less affected by the formality which was the crowning effect of years of labour, intermingled with doubts and fears and oft-renewed energy to overcome what at times appeared unsurmountable obstacles. Moreover, was it not the triumphal

termination of numb[illegible]ss failures, the successful solution of the frequently repeate[illegible]ttempts of the British people, ever since America had be[illegible]overed, to find a new route to Asia? To what extent the th[illegible]ts of those present were turned to the past must, with that undemonstrative group, remain a secret with each individual person. This much may be said: To all the scene was deeply impressive, and especially to the many hundreds of workmen, who from an early hour up to the last moment, had struggled to do their part, and who were now mute lookers-on at the single individual actively [illegible]ngaged—at one who in his own person united the past with the present, the most prominent member of the ancient company of "Adventurers of England," as he was the representative of the great Canadian Pacific Railway Company. The blows on the spike were repeated until it was driven home. The silence, however, continued unbroken, and it must be said that a more solemn ceremony has been witnessed with less solemnity. It seemed as if the act now performed had worked a spell on all present. Each one appeared absorbed in his own reflections. The abstraction of mind, or silent emotion, or whatever it might be, was, however, of short duration. Suddenly a cheer spontaneously burst forth, and it was no ordinary cheer. The subdued enthusiasm, the pent-up feelings of men familiar with hard work, now found vent. Cheer upon cheer followed, as if it was difficult to satisfy the spirit which had been aroused. Such a scene is conceivable on the field of hard-fought battle at the moment when victory is assured.

"Not infrequently some matter-of-fact remark forms the termination of the display of great emotion. As the shouts subsided and the exchange of congratulations were being given, a voice was heard, in the most prosaic tones, as of constant daily occurrence: "All aboard for the Pacific." The notice was quickly acted upon and in a few minutes the train was in motion. It passed over the newly laid rail and amid renewed cheers sped on its way westward.

"On the same night a telegram was sent to O[illegible]awa and published in the eastern Canadian papers. It ran: "The first train from Montreal is approaching Yale, within a few hours of the Pacific Coast. The last spike was driven this morning by Hon. Donald A. Smith at Craigellachie, in Engle Pass, some 340 miles from Port Moody. On reaching the coast our running time from Montreal, exclusive of stoppages, will be five days, averaging twenty-four miles per hour....."

Result of the Completion of the Railway—The driving of the last spike at Craigellachie opened up not only the glorious scenery and invigorating atmosphere of Canada's mountain-belt to the whole world, but also its immense resources in minerals and timber, and the many industries and enterprises dependent upon them, to the capitalist. Soon after construction had been completed European and American travel began to and fro over the transcontinental highway. The fame of the Rockies and Selkirks went forth to the world and they have become the playground of those whose leisure permits such recreation. Others with limited time, content themselves with spending a day or two en route, at the favourite resorts, or simply with passing through and seeing all that can be seen from the railway during an unbroken journey.

In order to provide meals for its passengers and at the same time not to make its trains heavier by hauling extra cars over the steeper portions of the line, the Company at first found it necessary to erect dining-halls at various points in the mountains. With increase of travel, these gradually became stopping-places, and there finally evolved the large hotels at Banff and Lake Louise and the smaller but commodious hotels at Field, Glacier, Revelstoke, Sicamous and North Bend. These hotels are found all too small to accommodate the multitudes that visit the mountain-places during the tourist season. And so all the process of enlargement goes on.

Government Surveys (1886)—In this year the Selkirks were visited by the Dominion Government Surveyors and a careful traverse-survey of the railway line was made to establish it as a base for future land surveys. The work was under the direction of Otto J. Klotz. In the course of his work, Mr. Klotz established the position and altitude above the sea level of a number of the prominent peaks, to which also he gave the names they now bear, notably Mts. Sir Donald, Macdonald, Tupper, MacKenzie and Cartier. In conjunction with the survey of the railway-line, a preliminary topographical survey of the mountains, valleys, and streams adjacent was made. It was in charge of J. J. McArthur, the veteran topographer of the Department of the Interior. In the "Selkirk Range," he is referred to as "a quiet, unassuming man, who has probably climbed more mountains in these regions than any other person, and has made a large number of first ascents. No flourish of trumpets ushered him forth to conquest; no crown of laurels awaited his victory; a corps of trained Swiss guides was not at hand to place his footsteps, to check his down-slidings and select for him the surest road. With one assistant, transit and camera on back, many a perilous climb has been made, the rope only being used in case of most urgent need. In all kinds of weather, through snow, over ice and in pouring rain, many a difficult ascent has been accomplished, many privations encountered and much hardship endured; the only record being a few terse paragraphs in the Departmental Bluebook. Short as they are they are well worth reading."

The years 1887 and 1888 saw other surveyors in the region, extending the land-surveys system to the tract of land known as the "Railway Belt of British Columbia." This tract, which extends for twenty miles on each side of the railway line, had been conveyed by the Provincial Government to the Federal Government as compensation for the construction of the Railway.

First Scientific Observations of the Illecillewaet Glacier (1887)—On July 16th the Illecillewaet Glacier was visited by Messrs. George and William S. Vaux, Jr., and Miss Vaux, of Philadelphia, and a series of observations inaugurated, comprising photographs from fixed points and measurements to the nearest ice. These have been faithfully carried on from year to year with increasing accuracy, right up to date. They are here recorded in greater detail under the caption, "Glaciers of the Selkirks."

Topographical Survey by William Spotswood Green (1888)—It was the expedition of Messrs. Barrington and Swanzy and the glowing description they gave of the scenery that aroused Mr. Green's interest. Survey instruments were loaned to him by the Royal

Geographical Society and on the 29th June, 1888, accompanied by Mr. Swanzy, he started for New York, arriving at Glacier on the 17th of July.

Glacier House, which they made their headquarters, was built by the Railway Company in 1886 as a stopping-place, some two and a half miles from the summit of Rogers Pass and almost at the junction of the two streams which, flowing respectively from the Illecillewaet Glacier and the east face of Mt. Cheops, unite to form the southerly or main branch of the Illecillewaet River. The hotel was then a pretty little building, somewhat in the Swiss Chalet style, nestling among the trees at the base of Mt. Abbott, and contained some half-dozen bedrooms and a spacious dining-room, capable of seating a large number of travellers. The wants of the public were first served by a staff from the dining-car under a man called Wharton. Soon, however, it became apparent that this beautiful spot would be a favourite with lovers of Nature; and in 1887 the house was placed under the management of Mr. H. A. Perley who, assisted by a capable staff, made himself popular with guests, even then filling it to repletion during the summer months.

Messrs. Green and Swanzy spent six weeks—from July 17th to August 29th—exploring, surveying and climbing in the vicinity. The result was the compilation and publication of the first topographical map of the district surrounding Glacier House. It accompanied an able and interesting paper read by Mr. Green before the Royal Geographical Society on the evening of February 11th, 1889. (See proceedings of the Royal Geographical Society Vol. XI., No. 3, March 1889.)

This paper was followed later by Mr. Green's vividly descriptive book, "Among the Selkirk Glaciers," published in 1890, which, unfortunately, is now out of print and can only be picked up in second-hand book stores. A volume of rare interest and charm, it ought to be reprinted.

From a climber's point of view the chief features of the expedition were the first attempt to ascend Mt. Sir Donald and the successful first ascent of Mt. Bonney. Many of the names of peaks and places that are so familiar to habitual visitors at Glacier can be traced to this expedition, for instance: Mts. Bonney, Fox, Donkin, Dawson, Macoun, Asulkan Pass and Creek, Geikie Glacier, Loop Creek, Marion Lake, Lily Col and others.

The chief difficulty encountered by Messrs. Green and Swanzy was that of procuring packers to carry supplies and other outfit. On several occasions they were compelled to carry double packs, taking one a short distance and then returning for the other, a process which, in that almost impenetrable region, must have been heart-breaking. "At Donald a mighty hunter was discovered, who expressed a desire to join us and accept our terms, but when he heard we were two parsons he 'chucked it up' in disgust, saying that he would have to knock off swearing for more than a month and that that was impossible." A cayuse (Indian pony) was sent up to the glacier for their use by Mr. Marpole, then superintendent of the railway at Donald. No pack-saddle came, so the best possible was done with a riding-saddle, and the two gentlemen started on

their first expedition to Mt. Sir Donald. "The path was getting steep and the pack seemed to need bracing up. Some idea of a similar nature must have crossed the mind of the cayuse, for without the slightest warning, he took a sudden fit of back-jumping, tumbled down, rolled over and over down the slope and when our goods were thoroughly smashed up and scattered to the winds, he got on his legs and shook himself with apparent satisfaction. It was really too horrible—I rushed to my unfortunate knapsack. If the man from Donald had been with us I think I'd have given him permission to swear for five minutes without stopping and so vicariously relieve my over-burdened mind. A sextant, fortunately not a new one, was smashed to bits. I picked up its little ivory scale all by itself on a bush. A thermometer, which had been carefully tested at Kew, was in shivers. I could not look at my photographic plates then, and concluded they were all broken. Fortunately, however, they escaped; the rifle, too, came off all right. But oh! what fools we felt at having been taken in by the deceitful calm of that cayuse's temper. We all made good resolutions on the spot, and kept them so far as never again to trust any instrument to the tender mercy of a horse."

The Alpine Club, England, and The Swiss Alpine Club (1890).—In this year Mr. Harold W. Topham, of the English Club, and Messrs. Emil Huber and Karl Sulzer of the Swiss Club, visited the Selkirks. They joined forces and added to the number Mr. Harold E. Forster, a gentleman now residing near Wilmer on the Upper Columbia River. Together and in couples they made a series of expeditions from Glacier House, their permanent base. The following first ascents are recorded to their credit: Mts. Fox and Donkin by Topham; Mt. Selwyn (named Mt. Deville by Green and subsequently changed) by Topham and Forster; Mts. Purity and Sugar Loaf by Huber, Topham and Forster; Mts. Sir Donald and Uto Peak by Huber and Sulzer; and Swiss Peak by Sulzer.

In a paper read before the Royal Geographical Society (Proceedings of the Royal Geographical Society, Vol. XIII. 1891) Topham remarks: "The glaciers of the Selkirks, though comparatively small, are very numerous and the area which is covered with ice is large in proportion to that which is covered with snow. Where in Switzerland we would expect to find patches of snow, in the Selkirks we may expect to find ice. The great snow-fall in the Selkirks may perhaps explain this. The pressure exerted upon the lower layers of the snow by the great depth of the snow which lies above them tends to consolidate and make into ice these lower layers."

"The great drawback to travelling in the range is the thickness of vegetation at the bottom of the valleys and the difficulty of procuring men capable of acting as porters over a mountain country."

(For full account of these expeditions see "The Selkirk Range" by A. O. Wheeler.)

The Appalachian Mountain Club of Boston (1890).—The first representative of the Appalachian Mountain Club to visit the Selkirks was Professor Chas E. Fay, of Tufts College, Mass. He arrived immediately after the departure of Messrs. Huber and Sulzer and was so much impressed with the possibilities spread out before him that on his return he seems to have laid them vigorously before his club; for from 1893 on, most of the recorded expeditions and climbs are by

Edouard Feuz of Interlaken

members of the Appalachian Mountain Club, although none assumed the proportions of those expeditions made by Messrs. Green, Topham, Forster, Huber and Sulzer. Professor Fay may well be regarded as one of the most prominent among the pioneer climbers of the Selkirks.

Triangulation of the Railway Belt (1891-92)—W. S. Drewry, who since 1889 had been conducting a triangulation of the Railway Belt through the Main Range, was occupied on a similar work in the Selkirks during the years 1891-2. All visitors to the Selkirks hear of "The Prairie Hills" and "Bald Mountain" lying along the east side of Beaver River. The following extract from Drewry's report gives an idea of the strikingly impressive views seen from Bald Mountain.

"By the middle of October the snow was knee-deep on the summits and part way down the slopes of the mountains. It was therefore decided to retrace our steps to the Columbia Valley. Before doing so, however, I made an exploratory trip across Bald Mountain to the slopes of the Beaver Valley. From a coign of vantage on the mountain, a view of solemn grandeur was obtained. I must confess that the feeling of awe and impotence which the spectacle inspired will long remain with me. Facing us and extending to our right was the dark mass of Mt. Sir Donald, rising 10,625 ft. above the sea, with five miles of almost sheer cliffs 3,000 ft. high. To our left, and west of the Beaver for more than twenty miles, peak after peak towered aloft surpassing 10,000 ft., but one and all, from top to base, were clad in glacier and snow. Not a living thing was visible and the sense of desolation and awful loneliness conveyed was overpowering. Nowhere else in the mountains have I seen such immense masses of glaciers and ice-fields and I believe that little of the area in which these lie has yet been trodden by man."

Subsequent Mountaineering.—From 1893 to the present day the Selkirks have surely and steadily come into prominence as an attractive field for the mo[illegible]neer, the nature-lover, the artist, the scientist and the holid[illegible]st. One by one the peaks reached from Glacier House have [illegible]onquered, the passes traversed, and the glaciers and valleys [illegible]ored, until now only one virgin peak of exceptional prominence remains, and that one, very difficult of access, is Mt. Sir Sandford, some thirty miles due north of Glacier.

A few of the more important of these exploits are here briefly outlined. (For full details see Wheeler's "Selkirk Range.")

1895—Messrs. Abbott, Fay, Thompson and Little made the first traverse of the ridge bounding the Asulkan Valley on the west, including the ascents of Mt. Afton, Mt. Abbott, The Rampart and Mt Castor, the three latter being first ascents. The remaining two prominent peaks of the ridge—The Dome and Mt. Pollux—remained unconquered until climb[illegible] in 1897 by a combined party from the Alpine Club, England, and the Appalachian Mountain Club. This party had with them the first accredited Swiss guide to appear in the Selkirks—Peter Sarbach, who was brought out by the Englishmen.

1899—This year witnessed the advent at Glacier of two properly certificated Swiss guides, employed by the Canadian Pacific Railway Company—Edouard Feuz and Christian Hasler, of Interlaken. The former has been in the Selkirks every summer since that date

until the present summer. (1911.) Two of his sons and a nephew are now, also, in the employ of the railway company as guides.

The year was noted for the first ascent of Mt. Dawson, by Professor Fay and Professor H. C. Parker, of Columbia University. The highest point (Hasler Peak) was reached. Mt. Dawson is the peak of second greatest known altitude above sea-level in the Selkirks (11,115 ft.) being surpassed only by Mt. Sir Sandford (11,623 ft.).

The year was also noted for the second ascent of Mt. Sir Donald by M. Leprince-Ringuet, by the route attempted by W. S. Green. He was accompanied by guides Feuz and Hasler.

1900—The Selkirks were now so greatly in favour that it was necessary to detail four Swiss guides to Glacier House. No less than four ascents were made of Mt. Sir Donald in the order named: By George Vaux, Jr., A.M.C., by J. H. Scattergood, A.M.C., both of Philadelphia; by the Rev. James Outram and G. C. Butler and by Hugh E. M. Stutfield, A. C., of London, England.

1901—The records of 1901 include the second ascent of Mt. Dawson (Hasler Peak) by B. S. Comstock, of New York; the first but futile attempt on Mt. Sir Donald by a lady, Mrs. Florence Gough, registering from Ottawa; the first ascent of Sir Donald by a lady, Mrs. E. E. Berens, St. Mary's Cray, Kent, England, accompanied by her husband and guides Karl Schlunegger and Chas. Clarke; and the first ascent of Eagle Peak by a lady, Miss Henrietta L. Tuzo, Warlington, England, now Mrs. J. A. Wilson, Ottawa, a member of the A.C.C.

1902—In this year the first ascent of Mt. Macoun was made by the late Rev. J. C. Herdman, of Calgary, one of the first two Vice-Presidents of the Alpine Club of Canada. Also, the second ascent by a lady, of Mt. Sir Donald was made, and in the face of a blinding snow storm. The plucky climber, who refused to forego the triu[illegible] she had set out to win, was Miss Marion Raymond, A.C.C., of Boston, Mass.

1901-2—These are two outstanding years in the modern history of the Selkirks. They mark the Topographical Survey of the region by the Federal Government resulting in an accurate detailed topographic map showing contour lines at 100 feet equi-distance. The survey was in charge of A. O. Wheeler, F.R.G.S., and the information gathered during the survey, together with all other available information concerning the Selkirks, was compiled in two volumes, published by the Department of the Interior under the title of "The Selkirk Range." Volume I. is composed of some 450 pages of text, together with ninety illustrations. Volume II. is made up of maps and sketches of the survey, of previous surveys, and of routes up prominent peaks.

A sad note among the happy records of 1902 was the account of the death of Fritz, a dog with more right to the title "mountaineer" than many who lay claim to it. Fritz is of the noble company of "Rab" and "Stickeen," immortalized by Dr. John Brown and John Muir. The story of his climbs and of his tragic death is matter for a little classic, wanting only the discerning and sympathetic writer with the "magic of the words." He was killed on the north side of the

Geikie Glacier by a fall of 700 feet. In his two summers of life in the Selkirks he had climbed many peaks, among them Swiss Peak, Rogers Peak, Cougar Peak, Mts. Ursus Major, Avalanche, Cheops, Abbott, Grizzly, Cartier and Mackenzie. He was a general favourite and well known. In the minute-book at Glacier House a friend has entered a tribute to his memory.

1903—The most important ascent of this season was that made by Herr E. Tewes, Bremen, Germany, of Mt. Sir Donald by the north-west arête (a new route) accompanied by the guides Edouard Feuz and Christian Bohren.

1904—This was a ladies' year. The second ascent of Mt. Bonney (the first had been made by W. S. Green in 1888) was accomplished by Miss Henrietta L. Tuzo, previously noted as having made the first ascent by a lady, of Eagle Peak. The third ascent of Mt. Bonney was made a little later by Miss Gertrude E. Benham, of London, England. Miss Tuzo chose the route via Marion Lake trail, Mts. Abbott, Afton and the Lily Glacier, ascending the escarpment of the Swanzy-Bonney Ridge between Mts. Swanzy and Clarke's Peak and following the escarpment over Clarke's Peak to the cairn erected by W. S. Green in 1888. Miss Benham made the ascent via Loop Torrent, following closely in the footsteps of W. S. Green. Guide Christian Bohren accompanied Miss Tuzo and Edouard Feuz accompanied Miss Benham.

The same year Miss Benham made the first ascent by a lady, of Swiss Peak, at the same time making the traverse and first ascents of Fleming Peak and Grant Peak. She was closely followed over the same route by Miss Turzo, to whom belongs the second ascent by a lady, of these three peaks.

Beyond the Asulkan Pass, Miss Benham made the first ascent by a lady, of Mt. Dawson (Hasler Peak). Both made successful ascents of Mt. Sir Donald, making respectively the third and fourth ascents by ladies.

The year further witnessed the record ascent of Mt. Sir Donald by J. Duke Smith, of Boston, who, according to the statement in the minute-book, left the hotel with Christian Bohren at 4.08 a.m. and arrived at the summit at 8.35 a.m. Starting homeward at 9.30 a.m., the hotel was reached at 12.20 p.m.—eight hours and twelve minutes, with fifty minutes spent at the summit. The mountain was in its best condition.

1905—War was carried into Cougar Torrent Valley when Mt. Bagheera was conquered by W. S. Jackson, of Upper Canada College, Toronto, accompanied by Edouard Feuz, Jr.

1906—The principal feat of the season was the first ascent of Mt. Tupper by Wolfgang Koehler, of Leipzig, with the guides Edouard Feuz, Jr., and Gottfried Feuz (for account see Canadian Alpine Journal, Vol. II., No. I.).

1907—Little of importance was done in the Selkirks, partly owing to the continuous snowfall on the heights. The highest peaks were in bad condition. The only ascent of Mt. Sir Donald this season was by F. W. Freeborn and Jean Parker (the first Canadian lady to climb it) with guides Edouard Feuz Sr. and Jr. Dr. J. W. A. Hickson with Edouard Feuz, Jr., made the first ascent of Mt. McGill—

which he named for his University—a peak beyond the Cougar Valley.

1908—The inaction of the previous year was now fully redeemed. The youthful Alpine Club of Canada (organized in March, 1906, at Winnipeg) held its third annual camp at the summit of Rogers Pass, one hundred and seventy-seven members being placed under canvas. The session lasted for eight days, and fifty-seven graduating members qualified for active membership by climbing Mt. Sir Donald, Mt. Rogers, or Mt. Hermit. Directly after the camp the first ascent of Mt. Tupper by a lady was made by Miss Jean Parker of Winnipeg, accompanied by H. Worsfold, of Port Hope, Ontario, with guides Edouard Feuz, senior and junior. An attempt was made for the first time upon Mt. Sir Sandford by B. S. Comstock, of New York, and Howard Palmer, of Boston, accompanied by Manual Dainard, a local guide from Golden, B.C. Owing to the attack having been made upon the wrong side of the mountain the attempt was unsuccessful.

Beyond the Asulkan Pass, Professor W. D. Holway and F. K. Butters of Minneapolis, and Howard Palmer, made the first ascent of Cyprian Peak, the lower of the two highest peaks of the Bishop's Range. They were without guides.

One of the most remarkable records made in the Canadian Rockies was accomplished this season by Edouard Frazelin of Bruneck, Tyrol, Austria. His record in the log-book at Glacier House reads as follows: "6th July, Mt. Sir Donald; 7th July, Asulkan Pass, Dawson Glacier; 8th July, Hasler Peak, Feuz Peak, Michel Peak (of Mt. Dawson), and Donkin Pass; 9th July, Dawson Glacier, Asulkan Pass, Glacier House." Herr Franzelin climbed entirely alone.

A new route was tried on Mt. Sir Donald and found feasible. By ascending a chimney, a dangerous couloir subject to avalanches of ice, rock and snow, is eliminated from the climb. This chimney has since become the stock route.

1909—Some notable mountaineering was done in 1909. Val. A. Fynn, A.C.C., of Blackheath, England, and A. M. Bartleet, of Birmingham, England, made the second ascent of Mt. Sir Donald by the north-west arête, without guides.

Beyond the Asulkan Pass, Prof. W. D. Holway, F. K. Butters and Howard Palmer, A.C.C., again worked together. They made the first ascent of Augustine Peak, the highest point of the Bishop's Range; also the first ascent of Mt. Kilpatrick in the Purity Range; and climbed Mt. Dawson (Hasler Peak) from the south side, commencing the ascent near the summit of the Bishop's Pass. They also reached the summit of Mt. Purity and, crossing the lowest pass of the Purity Range (Purity Pass), carried their explorations to the glaciers at the head of Battle Torrent (Battle Glaciers) and some distance down that stream. They closed a successful season by an ascent of Mt. Tupper. No guides were employed on any of the climbs.

In this year a second attempt was made upon Mt. Sir Sandford. The party consisted of B. S. Comstock, Howard Palmer and Prof. H. C. Parker, all of the A.A.C. and A.C.C., again under the guidance of Manual Dainard. Two ladies were with the party but did not attempt the climb. The base of the mountain was reached and an ascent made for some distance up its slopes.

1910—This year two parties attempted the ascent of Mt.

Sir Sandford. J. P. Forde of Revelstoke, P. D. McTavish of Vancouver, Rev. A. M. Gordon of Lethbridge, and Sidney H. Baker of Glacier, all of the A.C.C., made the attempt overland from Six Mile Creek station on the C.P.R., but failed to reach the mountain, owing to deep snow on the hillsides and swollen torrents. In an attempt to cross Spinster Torrent all their provisions were lost and one of the party narrowly escaped drowning. They returned to the railway, having suffered considerable hardship.

The other party, Prof. Holway, F. K. Butters and Howard Palmer, went in by the Columbia River and Gold Creek, reached the mountain and made a very determined effort to get to the top. Owing to heavy snows of the previous winter and a late spring, that face of the mountain which they attacked presented tremendous ice-slopes entailing excessive step-cutting. And one more failure to conquer this defiant monarch of the remoter Selkirks was added to the annals of Canadian mountaineering. But it is only another chapter of conquest deferred. (1911).

During this season several ascents were made of Sir Donald. Mt. Tupper was climbed twice, first by Oliver Wheeler and second by Dr. J. W. A. Hickson. Oliver Wheeler broke the record, Mt. Tupper offering special opportunities for brilliant rock-climbing. Mr. Wheeler bivouaced a little way above the hut on Mt. Rogers and began to climb at 3.25 a.m.; reached the summit of Mt. Tupper at 5.30 a.m. and was back at Glacier House for breakfast at 9.10 a.m.

Some attention also was paid to the lower Selkirks. When the official programme of the Alpine Club of Canada closed for the season, Mr. A. O. Wheeler, Director of the Club, in collaboration with Dr. T. G. Longstaff of London, carried an expedition into the Spillimacheen Mountains, a minor range of the Selkirks, with the object of ascertaining their mountaineering possibilities. Dr. Longstaff's advent marks a red-letter day in Canadian climbing. His extensive explorations and discoveries in the Himalaya and his conquest of Mt. Trisul (23,406 ft.) are now Himalayan history, and his place is high as geographer and mountaineer.

The route of the journey lay up the Columbia River to Heffner's Landing and thence by pack-train up Bugaboo Creek to its source at the summit of the range, Bugaboo Pass. The expedition lasted through the month of September. And, though the time was short and the season late; though much rain and snow fell; though the projected return route via Duncan River, Beaver River and Bear Creek had to be abandoned, owing to gorges and jungles impassable for pack-horses and to the obliteration of old trails, yet the expedition was not unfruitful. A photo-topographic survey of the route and adjoining country was made. At the summit of the Spillimacheen some fine alpine country was seen, offering many attractions to climbers; particularly that immediately north of the Bugaboo Pass, where are a number of sharp rock-spires rising directly from the snow, that bear striking resemblance to the Chamounix Aiguilles. They are quite unlike the usual Selkirk structure and would furnish extraordinarily fine climbs. On all sides great peaks rise above the general line of altitude and wide snowfields and glaciers lie between them. It is not thought, however, that the highest elevations will be found to exceed 11,000 feet. All the way between this line across the range

and Bald Mountain at its northerly extremity, is a similar tract of mountain country of surpassing interest but as yet little accessible owing to lack of trails or trails littered with fallen timber, and streams from which the bridges are gone. The same kind of country extends southward for miles, embracing many fine alpine features, such as Mt. Hammond and the peaks on Toby and Horse-Thief Creeks, which have become known on account of the camp held at the head of Toby Creek in 1909 by Earl Grey, Governor-General of Canada.

In the same section also, on September 2nd, E. W. Harnden of Boston, and C. D. Ellis of Wilmer, B.C., attempted the first ascent of Mt. Hammond. Owing to fatigue, Mr. Harnden gave out and Ellis pushed on alone and reached the summit. The start was made from Paradise Mine, at about 8,000 feet. According to Mr. Ellis' aneroid barometer Mt. Hammond has an altitude of 12,125 feet. Considerable doubt exists as to whether there is any peak of so great an elevation in this section of the Selkirks; and until more reliable and complete methods have been employed, the above altitude can only be accepted tentatively. This is the first notable climbing done in this interesting region.

Fritz, a hardy mountaineer.

CHAPTER II.

PEAKS, PASSES, AND VALLEYS REACHED FROM GLACIER.

GLACIER (4,093 ft.).

Glacier Park. **Name:** In relation to Glacier House and Glacier station. **Location:** This mountain park reserve extends from Mt. McNichol at the north of the Hermit Range to Battle Creek, south of Purity Range; and from the upper reaches of the North Fork of the Spillimacheen River east of Bald Mt. to Corbin Pass near Illecillewaet Station. It includes all the well-known ranges reached from Glacier House and covers an area of 576 square miles. Glacier is the name of the station on the C. P. Railway, in the alpine heart of the Selkirks, 1 1/6 miles from the Illicillewaet Glacier. The appellation is obvious.

Location:—Glacier Station is situated on the western slopes of the Selkirks near the summit of the Range, which is crossed by the railway through Rogers Pass (4351 ft.). On leaving the summit of the the railway travels a little east of south for two and a half miles. It then describes a U-shaped curve, doubling back on its previous course for some distance before again assuming a westerly direction. At the most southerly point of this curve is Glacier Station (4093 ft.). (See Wheeler's Topographical Map, Vol. II., "Selkirk Range.")

Mountains and Places of Interest that may be Reached from Glacier. How to Reach Places of Interest.

Swiss Guides—Since 1899 not less than two properly accredited have been stationed here. They are engaged by the Railway Company and are charged for at the rate of $5.00 each per day.

Glacier House—The hotel so happily named has an atmosphere of the old-fashioned inn. The narrow glen is a tranquil place save for about half an hour twice a day, when the train stops to allow through-passengers to dine. Then there is a stir of human sound and movement as sudden as that ancient uprising from the ground in the Scottish mountains in answer to the shrill whistle of Roderick Dhu. And as sudden is the quiet of the Canadian glen resumed as when the chieftain waved his hand and the highland garrison disappeared in hill and bush and broom. The engine shrieks, the people are all aboard, and the train vanishes in the folding mountains westward.

Mine hostess, Mrs. Young, welcomes the coming and speeds the parting guest in the old way of hospitality; takes a practical, helpful interest in his excursions, climbs, and scientific pursuits; and provides a menu that tastes like things one eats at home. Everything in the hotel, which can accommodate 150 guests, is orderly without being mechanical. Rates: $3.50 per day and upward (American plan). Special rates to parties prolonging their visits.

The most charming place in this whole region of alpine charm is just Glacier itself. An invalid unable to stir a dozen steps could enjoy a summer here. There is something winsome in its grandeur, perhaps owing to a certain friendliness in the opposite mountain whose sombre forests are relieved by strips of brighter green and a

Showing Loop from Mt. Cougar. (Mts. Sir Donald, Uto and Avalanche on left)

Glacier House

silvery ribbon-stream falling, falling forever from its high source beyond hidden alpine meadows just over the edge of the topmost pines; owing also to the turf sprinkled with crimson-tipped daisies all about the chalet, and the rainbow playing on a fountain when the sun is high in the blue. Glacier is a choice recruiting ground for all tired pilgrims from pitiless cities.

A special interest attaches to the place, too, in that mountaineering as a sport began here in 1888, and several seasons of climbing went into history long before the Lake Louise, Yoho, and Ice River regions became popular.

The accompanying notes state what climbs and expeditions require either Swiss or native guides. The Swiss guides have been carefully chosen by the Railway Company, and have, with one or two exceptions, always been reliable and competent men of high standing in their own country. And this is why so very few accidents have occurred in the Canadian Alps. Every man on the staff is a competent and trustworthy guide. Edward Feuz, Sr., who came to Glacier in 1890 and is growing grey in the Company's service and in Canadian mountaineering, is the father of the craft. His two sons, Edouard, Jr., and Ernest, and his nephew Gottfried, are employed at different climbing centres in the Mountains. These three boys have each spent one or more winters in the Rockies. Though affectionately termed boys in the craft, both Edouard and Gottfried are married. Gottfried and his wife spent the winter of 1910-11 at Mt. Stephen House, Field. They are all general favourites, many climbers regarding them as personal friends.

Outfits and ponies—Mr. Sidney H. Baker is the company's outfitter at Glacier. He is a man of distinct character, well informed and well read, an interesting companion, a keen mountaineer, a member of the Alpine Club of Canada and of the Royal Geographical Society. He has on hand twenty well-trained and perfectly safe saddle and pack-ponies and two pony guides, ready for any short or long expedition that may be desired by his patrons. You are lucky if you can secure his personal attendance, but, as he cannot be with all, he gives his best supervision to parties sent out in charge of his subordinates.

Tariff:—

Illecillewaet Glacier and return, time allowed 2 hours	$1.00
Asulkan Glacier and return, time allowed 4 hours	2.00
Marion Lake and return, time allowed 3 hours	1.50
Overlook on Mt. Abbott, time allowed 6 hours	3.00
Cascade Summer House and Avalanche Basin, time allowed 3 hours	1.50
Caves of Cheops (Nakimu Caves) via the Loop and Cougar Brook returning by the same route, or over Baloo Pass and Rogers Pass	4.00

If the limits given above are exceeded, 50 cents per hour is charged.

Raincoats and luncheon bags are provided free to riders.

Pack-outfits can be organized at any time for distant expeditions, but a month's work must be guaranteed. In such cases Mr. Baker's personal attendance is given.

In connection with his outfitting business Mr. Baker has a curio

department where photographs, post cards, guide books, souvenirs and mountain literature may be purchased.

A carriage drive from Glacier House to the Caves in Cougar Valley, it is hoped, will be completed by the end of the season (1911). It is proposed to build the road to within fifteen minutes' walk of the caves. All other expeditions must be made by pony or on foot.

The various climbs, expeditions and places of interest are noted in alphabetical order. Altitudes are in feet above sea-level; distances in miles and fractions of a mile. Going time only is given, unless otherwise stated. As a general rule two-thirds of going time should be allowed for return.

Mt. Abbott—Name: After H. Abbott, an official of the C.P.R.
Altitude: 8081 ft.

Location: South of the railway between Asulkan and Loop Brooks. Its summit, a high point of the Asulkan Valley, is reached by a path starting up the mountain immediately behind the hotel where the wing and annex join.

Distance: The distance is about 4 miles and the time required from 3½ to 4 hours. For novices one guide is necessary.

View: The summit of Mt. Abbott commands a very fine view of the Asulkan Pass (a snow pass), the Illecillewaet Névé, the entire west face of the Sir Donald Range, the narrow defile of Rogers Pass, and the south face of the Hermit Range; looks directly into the valley of Cougar Brook and, turning to the left, takes in the east face of Mt. Bonney. It is one of the most comprehensive view-points of the entire range. The expedition is an easy one and well repays the exertion. On the way Marion Lake is passed and the path leading to Observation Point (see under M and O).

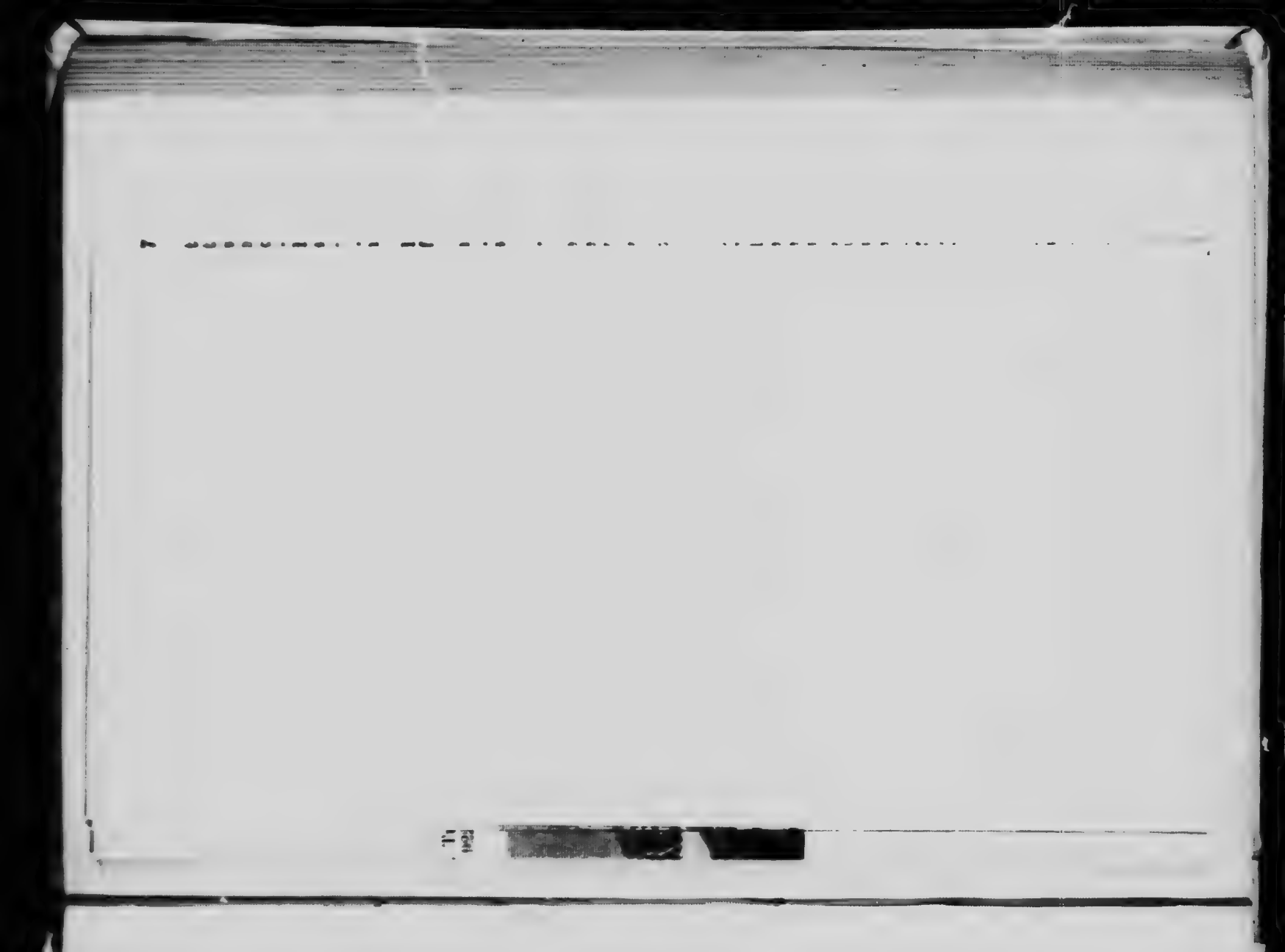
Ponies can be taken to the alps below the final rock-ridge, whence the climbing is all rock.

Just beyond Marion Lake a path branches to the left leading for three-quarters of a mile southerly along the mountain side and terminating at a vantage spot from which there is a perfect bird's eye view of the Asulkan Valley and the glacial amphitheatre at its upper end, very striking in contrasts, and showing the slow stupendous achievements of the Glacier. Here the merest layman may read the testimony of the rocks concerning glaciers as erosive factors. The path to this interesting spot is not much used and has been neglected.

The expedition to the Abbott Alp is one of the easiest and most satisfactory that can be made in a day from the hotel. Those not wishing to climb can leave out the ascent to the rock-ridge and its traverse to the summit, taking instead the two by paths to Observation Point (see under O) and to the unnamed point overlooking the Asulkan Valley and Glacier.

Abbott Ridge—Name: In relation to Mt. Abbott.
Altitude: 7,300 to 8,000 ft.

Location: Extends northerly from the summit of Mt. Abbott. The route is the same as to Mt. Abbott. The extreme north end of the Ridge is known locally as the Abbott Overlook. It presents much the same view as that from the Abbott summit, but with a difference. The lower elevation, while curtailing the views south and west, enhances the grandeur of the surrounding peaks and enables you to



Ursus Major
9038
Mt. Cheops
9806
Mt. Rogers
10,515
Mt. Tupper
9237
Mt. MacDonald
9495

Panorma

Panorma from Mt. Abbott.

look into the depths of the valleys. The prospect from this point has been likened to that from the Gorner Grat in Switzerland. It is especially noteworthy for the excellent view it gives of Rogers Pass Valley and the railway creeping through its line of snowsheds; of the long, dark valley of the Illecillewaet and its tributary, Loop Brook Valley, the silver paths of their rivers winding through the rich-hued green; and, in minutest detail, the west face of the Sir Donald Range and south face of the Hermit Range with their perennial snows gleaming white between the gray and blue, and the great amphi-theatre holding the glaciers of Mt. Swanzy, Mt. Bonney and Mt. Green. In every direction peaks rise above the general elevation and innumerable glaciers lie between.

Mt. Afton—Name: By Messrs. Phillip Abbott, C. E. Fay and C. S. Thompson. The initial letters of their names are the key of the word.

Location: Adjoining Mt. Abbott on the west side of the Asulkan Brook. The first ascent was made by Messrs. H. A. Perley, W. H. Rau and Miss Macleod in 1893; the second ascent by Prof. Charles E. Fay in 1894. Mt. Afton is reached via the Abbott Ridge.

Time required: 4 hours. For novices one guide is necessary.

Climb: Rock, ice and snow.

View: From the summit there is a magnificent view of the Swanzy-Bonney-Green amphitheatre, the immense precipices of the north wall of Mt. Bonney and of the wide reaches of the Bonr Glacier, 3,000 ft. below. To the south and west, immediately below, is the Lily Glacier, one of the sources of the Loop Brook.

Albert Canyon—Name: By the Rev. Principal Grant for Albert Rogers, nephew of Major Rogers, discoverer of Rogers Pass.

Altitude: 2,350 ft.

Location: On the Illecillewaet River, 2 miles east of Albert Canyon Station and 20 miles west, as the railway runs, of Glacier Station. The river here is restricted by the tilted rock strata and pours through a very narrow gorge with tremendous impetus. The rocks ascend almost vertically on either side from the water's edge to a considerable distance above the railway track whose bed has been cut out of the face of the precipice and in places overhangs, on trestles, the gulf beneath. Right above the chasm a platform has been erected by the Company and during the summer months day-trains stop five minutes to enable passengers to survey the canyon. From the railway the depth of the rushing water beneath appears much greater than it really is, the actual distance being 147 ft. The scene is one of grandeur and beauty and well repays a special visit. The easiest way to reach the canyon from Glacier House is to take the train to Albert Canyon Station and walk east-ward up the track for two miles.

Albert Creek—Name: By the Topographical Survey, with refer-ence to Albert Canyon Station where the creek crosses the railway. Albert Creek is a wildly flowing stream issuing from glaciers ten miles or more south-east of Albert Canyon Station. It flows through a deep V-shaped, heavily timbered valley whose sides are lined with pocket glaciers, and joins the Illecillewaet River three-quarters of a mile north-west of the station. A pony-trail leaves Albert Canyon Village and zigzags to the crest of the ridge immediately east of

the stream, then descends to the floor of the valley and leads to a mine (silver-galena) near its upper end.

Albert Peaks—Name: By the Topographical Survey in relation to Albert Canyon.

Altitude: Albert Peak, south, 9,098 ft.; Albert Peak, north, 9,562 ft.

Location: Six and seven miles south of Albert Canyon Station, the north peak being nearest the railway. The first ascent of S. Albert Peak was made by R. R. Copeland and H. Siegfried in 1909; the second ascent by G. L. Haggen and W. A. Aldritt in 1909.

Route: These peaks are reached most conveniently and easily from Twin Butte Station, ten miles west of Albert Canyon Station. Follow the railway track eastward to the trestle-bridge crossing Twin Creek. Here descend to the stream and take the slopes on the east side opposite the junction of the two branches of the creek; then follow the ridge. Both ascents are easy rock climbs and are best made from the small glaciers at their base. The North Peak may be climbed in one day. For the South Peak it is better to make camp at timber-line in the valley leading from the glaciers. For novices one guide is necessary.

View: From the north Peak there is an excellent view of Clach-na-Coodin Snowfield and the many summits surrounding it. From the south Peak, looking south and east, is disclosed a wild panorama of snow-clad peaks, icefields, glaciers, deep forested valleys and rushing torrents, all unknown. Directly east, in the near foreground, are the Albert Glacier and Snowfield. In the Canadian Alpine Journal, 1910, Mr. Copeland gives an account of the first ascent of north Albert Peak by himself and Mr. Siegfried, without a guide. About 1.30 p.m. they made the attack on a shoulder of the mountain which touches the railway half a mile east of Twin Creek, reaching its plateau at dusk after a climb of about 4,000 ft. Here they bivouaced for the night, having some lively diversion with a bear, "a huge, lanky, old silver-tip." At 5.30 next morning they started across the meadows to the foot of the glacier which terminates on an upper step of a natural winding stairway reaching to the valley below. They kept to the step immediately below the glacier's snout and ascended the face of the arête on the far side, a troublesome but interesting climb of 800 feet. Once on the firm arête "an exhilarating scramble of 2,000 feet brought them to the summit." For over twenty hours of the climb they had no water. And Mr. Copeland points out how and why they did not suffer from thirst: "With a calm mind, the actual craving need be little more than a slightly unpleasant experience." Do not think about it. Thus does mind triumph over matter.

In 1901 Mr. A. O. Wheeler made his topographical survey station on the slopes of the Albert massif at an altitude of 8,033 ft., being 6,050 ft. higher than the railway. This station is called North Twin.

Albert Canyon Station—Name: By C.P.R. Co., in reference to Albert Canyon.

Altitude: Rail level, 2,227 ft.

Location: 22 miles west from Glacier by the railway. The village of Albert Canyon is picturesquely situated on a small flat on

the east side of Albert Creek, its close boundaries being high wooded mountain-spurs and frowning cliffs which rise to snow-clad slopes and snow-capped summits. The population is about 50 or 75 persons, some of whom do a little farming. Here the Railway Company keeps several heavy engines ready to push overburdened trains up the steep grade to Rogers Pass. From the village a path leads through the forest of giant fir and cedar, devil's club, skunk cabbage and other thick underbrush, up a slope south of the track for half a mile to a warm spring said to contain mineral properties. The water has a temperature of from 75 to 80 degrees and the spring is used as a public bath.

Alder Creek—Name: By the C.P.R. Co., from the growth of alder bushes along its margin.

Altitude: 2,680 ft. at railway crossing.

Location: It joins the Beaver River 7 miles south of Beavermouth station.

Asulkan Brook and Valley—Name: By W. Spotswood Green with reference to the wild goats seen on the pass at the head of Asulkan Glacier. (Asulkan, Indian for wild goat.)

Altitude: 4,100 ft. rising to 6,600 ft.

Location: Asulkan Brook flows from the Asulkan Glacier about 4 miles south-east of Glacier House. A good trail leads up the valley terminating within a few yards of the ice. Saddle ponies can travel its full length. For 3 miles the grade is imperceptible, and for the remaining mile it is steep. Time required to the foot of the glacier and return, 4 hours. Unless one wishes to go on the glacier, no Swiss guide is required.

Route: The Asulkan Valley is a magnificent alpine glen. On the main path to the Illecillewaet Glacier about a quarter of a mile from the hotel, a sign-board points the way. The trail branches off, winding through a tall, close forest, whose bearded fir and hemlock and cedar, with luxuriant undergrowth (blossoms and berries in their season and the bright green foliage of the Devil's club) make a perpetual tropic gloom. Leaving the forest the trail crosses Asulkan Brook by a log bridge and follows its eastern bank, now through woods of spruce high above its margin and now along its very edge, almost touching the turbulent waters. Frequently through the openings in the trees the sable walls of Mt. Abbott, the Rampart, the Dome, and the snowy heights of Castor and Pollux come into view overhanging the valley on the west, their snows showing white against the azure sky, in clear and cloudless sunshine. These snows are the fountain-head of a series of cataracts in sight at intervals, that fall in silvery spray down the mountain-side and over high precipitous ledges to the stream below. In one place seven may be counted, variously named—"Asulkan Falls," "Seven Falls," "Menotah Falls." It is an enchanted valley. "The cataracts blow their trumpets from the steep," and the sunlight is the light of no common day. The gloom and the glory of mountain beauty meet in the valley. This feeling is intensified by the continuous sound of rushing waters, now faint when the path enters the woods, now filling the air as the torrent sweeps by at your feet.

At the upper end of the valley the trail, rising high above the brook, has been cut from the mountain side. Here the tongue or

snout of the Asulkan Glacier first comes in sight, partly buried in the piles of rock, mud, and boulders forming its terminal moraine, an accumulation borne down and deposited by the glacier through the course of ages. Above, to the right, are terraces of ice and snow, cracked and seamed in every direction by yawning crevasses; to the left rise the precipices of rock confining the Illecillewaet Névé, the snow cornices with which they are crested showing how ready is that lake of snow and ice to overflow its bounds. A feature of this upper part of the valley is the number of hoary marmots or whistlers (*Arctomys Columbianus*) that make their homes here among the rocks. Their shrill whistle is very human, and startling to the unknowing, and they are oftener heard than seen.

At the head of the valley, looking down stream to the right of the central ridge, an isolated rock stands out prominently from a bed of snow. It has been named the Ichthyosauras, not because of any resemblance of outline, but because that extinct marine monster came instantly to the mind of a visitor seeing it.

During the early spring of 1909 an avalanche came down the mountain side on the east, completely obliterating the trail and necessitating its being cut out through a wall of tangled tree-trunks. Here now lie trees more than 500 years old that have been snapped off at the roots by the force of the wind preceding the avalanche.

Asulkan Falls—Also known as The Seven Falls and Menotah Falls.

Location: On the west side of the Asulkan valley, about two-thirds of the way from Glacier House. They are nourished by the shrunken portions of the Asulkan Glacier lying below the Dome and Rampart. They fall about 300 ft.

Asulkan Glacier and Névé—Name: By W. S. Green with reference to the Asulkan Valley.

Altitude: 6,000 to 9,000 ft.

Location: At the head of and along the west side of upper Asulkan Valley.

Area: From 3 to 5 square miles.

First Ascent: By W. S. Green and the Rev. H. Swanzy, 1888; by a lady, Mrs. Dr. Stallard, 1896. This glacier presents several spectacular groups of seracs; also a number of fine crevasses of great depth, lined with pendant icicles. They resemble cavernous jaws set with sharp, cruel teeth. The play of the sunlight on their walls of green and blue is well worth observing. Persons going on the glacier, unless skilled mountaineers, require a guide, and no person should go on the ice without being roped. The natural trough of the glacier leads to Asulkan Pass, distant one mile from its snout at the head of the valley and 5 miles from Glacier House.

Routes: (1) The west wall of the valley can be crossed from the Glacier, via Sapphire Col between Mt. Castor and the Dome. (2) A traverse of the Glacier can be made around the south end of the peak. (3) At the head of the Glacier to the right of the Asulkan Pass looking north, an ascent can be made of the "Snow Dome," returning to the hotel by the Illecillewaet Névé and Glacier. These are all-day expeditions, and unless the climber is skilled on both snow and ice, a Swiss guide is necessary.

Patches of red snow of the Arctic regions are frequently seen on the Asulkan Névé and in many other places in the Selkirks. Professor John Macoun, Dominion Botanist, says concerning it:—"It is not of rare occurrence high up in the mountains, but is seldom noticed, as it is most often green and only discolours snow. It is a unicellular plant, an alga, related to the sea-weeds and belongs to the lowest form of plant life. The scientific name is *Protococcus nivalis* (red snow). It grows on the surface of the snow and is only a state of the species named *Protococcus Viridus*, because it is green. The plant is most frequently seen as green slime on trees, old boards, etc."

Asulkan Pass—Name: By W. S. Green, with reference to Asulkan Valley and Glacier.

Altitude: 7,710 ft.

Location: The divide leading from Asulkan Valley basin to the Valley of the Geikie Glacier and Creek.

Distance: 5 miles from Glacier House; 1 mile from the foot of the Asulkan Glacier. Novices on ice and snow require a guide.

Time required: 3½ to 4 hours.

View: From the crest of the Pass the view is magnificent. To the left rises Mt. Fox, the summit a blunted cone partly covered by snow. Upon the side directly opposite, two hanging glaciers send their fragments to the ice-river below. Over the outline of Mt. Fox is seen the long drawn-out mass of Mt. Dawson with jagged rock-edges outcropping from perpetual snows only to be buried in clouds that almost continuously wrap it round. Looking still to the left, the white crest of Mt. Selwyn is just seen. To the right of Mt. Dawson, quite alone stands the sharp cone of Mt. Donkin, a huge natural observatory. Between is the snow-mantled Donkin Pass; and at their base the Dawson and Donkin Glaciers flow together. Directly below the Asulkan Pass flows the Geikie Glacier, an ice-river forming the main outlet of the Illecillewaet Névé on the south. The descent to it is 2,800 ft., the upper portion, over shale, snow and grassy slopes; the lower, down steep cliffs with projecting, sharp rock edges, that cut like a knife. The grass-land abounds in many varieties of alpine flora, and during the summer months is gay with bloom. As indicated by the name Asulkan (Indian for wild goat), the mountain goat (*Haplocerus montanus*) frequents the slopes on the south side of the pass and is occasionally seen.

Asulkan Ridge—Name: By the Topographical Survey.

Greatest altitude: 9,329 ft.

Location: On the east side of Asulkan Brook; forms the west limit of the Illecillewaet Névé. Glacier Crest (7,419 ft.) and Mt. Lookout (8,219 ft.) are at the north extremity of the ridge, and the Snow Dome (the point of greatest elevation) is at the south extremity, the latter forming the divide between the two Névés. A splendid mountaineering expedition may be obtained by a traverse of the ridge, beginning with Glacier Crest and terminating at the Snow Dome, returning via the Asulkan Glacier or Illecillewaet Glacier and the regular trails.

Time: A full day is required and a guide is necessary.

Augustine Peak—Name: By the Topographical Survey.

Altitude: 10,762 ft.

Location: Easterly of the two highest peaks of the Bishop's Range.

First Ascent: By Prof. E. W. D. Holway, F. K. Butters and H Palmer in 1909, without guides. (For account of this ascent see Canadian Journal Vol. II., No. 2, p. 70.) It is described as a better rock-climb than Mts. Dawson, Sir Donald or Tupper.

Route: The members of the party crossed the Asulkan and Donkin Passes to Black Glacier, following it up until the first ice-fall on the left side. They then ascended a steep clay bank and reached the rocks above the ice-fall, whence they followed ledges, going up at every opportunity, chiefly over rocks, but occasionally crossing ice or snow in the gullies until they reached the eastern end of the final arête. This arête was found extremely narrow, dropping for a great distance on both sides, and quite sensational in places, great gaps occurring, down which they had to climb and then up the other side. In one of these a spare rope had to be left in order to get back. Finally the last gap was crossed and they stood on the summit. An ascent of this peak may possibly be made from Bishop's Glacier on the opposite side of the ridge.

Time required: In either case, three days are required for the expedition, camping two nights in Mitre Creek Valley below the Bishop's Glacier. Unless skilled mountaineers, one or two guides are necessary, according to the size of the party. When providing for the expedition, it must be remembered that Selkirk weather is very variable and that there may be delay from storms. All provisions and camp-equipment must be carried on the shoulders. Sleeping-bags, a canvas-cover or light silk tent, and condensed food-stuffs are necessary to reduce the weight to a minimum. You are here at the axis of the Selkirk Range and surrounded on all sides by glaciers and snowfields.

View: The view of the Purity Range immediately south, is alone worth the ascent.

Avalanche Mt.—Name: Owing to the numerous avalanches that sweep down the western sides across the railway which traverses along the foot of these slopes through a line of continuous snow-sheds.

Altitude: 9,387 ft.

Location: One of the peaks of the Sir Donald Range, directly above Rogers Pass. Its summit is on the east side.

First Ascent: By Major Rogers and party, 1881.

Route: It is reached from Glacier House via the trail to Cascade Summer House and Avalanche Crest, from whence it is an easy rock-climb. The ascent is made from the small glacier at the base of the peak. For novices one guide is necessary. Time allowed: 4 hours.

View: Mt. Avalanche commands an excellent view of the Beaver River Valley with Bald Mountain and the Prairie Hills rising above its western slopes. Avalanche and Eagle Glaciers lie on the east side of the Sir Donald Ridge, directly below.

Avalanche Crest—A rocky spur of Mt. Avalanche extending southerly. The Cascade Summer House trail leads to its foot. It is an exceptionally fine view-point, and easy of access. From the top one may gaze into the hazy blue distance of the dark Illecillewaet

Valley with its shining serpentine river, bordered by an endless array of snow peaks. No guides are necessary.

Time required: 2½ or 3 hours. The crest, which is partly alp-land, and the amphitheatre between it and Mt. Avalanche are of much interest owing to the *cirque* formation, to the abundance and variety of alpine flora and to the numerous whistlers (*Arctomys Columbianus*) and Parry's marmots (*Spermophilus Parryi*) that abound here.

Avalanche Glacier—Name: By the Topographical Survey in relation to Mt. Avalanche.

Altitude: 7,000 feet—8,500 feet.

Location: Its n. vé is in the cirque on the east side of the Sir Donald Range and it is enclosed by Mt. Macdonald, Mt. Avalanche, Eagle and Uto Peaks, and drains to Beaver River.

Area: About 2 square miles. It is an interesting snowfield seen perfectly from any of the summits named.

Route: Reached most easily from Glacier House by following the trail to Avalanche Basin and crossing the col between Eagle Peak and Mt. Avalanche.

Time required: 4 hours. For novices a guide is required.

Bagheera Mt.—Name: By the Topographical Survey (Bagheera, tiger), with reference to Cougar Brook.

Altitude: 9096 ft.

Location: The most westerly of the two highest peaks on the north side at the head of Cougar Brook Valley.

Route: Reached by the trail to the Caves of Cheops (Nakimu Caves) and thence up the valley.

Distance: From Glacier House 8 or 9 miles to the summit.

Time required: It is best to take 2 days for the ascent, spending one night in the cabin at the caves.

First Ascent: By W. S. Jackson who wrote an account of it for the Canadian Alpine Journal (1907). He describes the fine specimens of red snow (see Glossary) found half-way up the mountain. "Midway up were found beautiful waves of red snow, varying from pink on the crests to crimson in the troughs." The climb is rock with steep snow-slopes. Unless climbers are skilled mountaineers, one guide is necessary.

View: Beside the Valley of Mountain Creek and its several branches, the summit of Mt. Bagheera overlooks a vast array of peaks reaching northwards; also the divide between Cariboo Creek and the north branch of the Illecillewaet River and part of the Illecillewaet Valley itself. North and west twenty glaciers may be counted, notably three on the north branch especially large and interesting. Out of the centre of the nearest one rises a sharp pinnacle of rock, which is seen prominently from many points. It has been named "Fang Rock."

Bain Brook—Name: Probably after some prospector.

Location: A tributary to Incomappleux river (Fish Creek) from the west, joining it a short distance below Jeopardy Slide.

Bald Mt.—Name: Local, owing to smooth grassy slopes lying along its crest.

Altitude: 7,663 feet.

Location: On the east side of the Beaver River, opposite Mts.

Sir Donald and Macoun; stands low between the Summit Range of the Selkirks and the Dogtooth Mountains.

Route: Reached by trail from Bear Creek station. At the junction of the Beaver River and Grizzly Creek the trail forks, one path, now impassable owing to slides and fallen timber, leading up Grizzly Creek and its west branch to the divide at the head of the north branch of the Spillimacheen River; thence an easy opening ascent to the summit. The other path leads up Beaver River Valley from which it is a climb of between 3,000 and 4,000 feet.

Time required: It requires at least 4 days and a camp outfit to make this expedition comfortably. Mountain guides are necessary. Bald Mountain is of great interest. Its crest is composed of grassy slopes of considerable extent separated by transverse ridges. It suggests the likelihood that at some time, in a by-gone age, before the Beaver Valley was carved out, glaciers had swept across it and shorn off its crest leaving the ridges as dividing lateral moraines. The southern end is sprinkled with groves of shapely spruce trees, giving a park-like appearance.

View: The high tops of Bald Mountain present wonderful views of Mt. Sir Donald and the black precipitous wall of the eastern escarpment of the Selkirks' Summit. At the base of this great wall, high on the slopes of Beaver Valley, a long array of pocket-glaciers are in plain sight, and the glaciers of Mt. Sir Donald, Uto and Eagle Peaks; and the climber gets a peep into Glacier Circle, an alpine park of rare beauty set in the ice and snows of the Dawson Range. Bald Mountain furnishes first-rate hunting for such big game as cariboo, bear and goat. It is a paradise for the botanist, brilliant alpine flora following each other in quick succession; and for the photographer and artist, it is a rich and almost virgin field.

Hunters and climbers will find it a profitable outing to Bald Mountain. Mr. Wheeler has written of an expedition in 1902 from Glacier to Golden through mountain defiles by way of abandoned trails—trails which will be rebuilt and maintained for the pleasure of the public as soon as the rich Government can be persuaded to the enterprise. Of game on Bald Mountain he says: "It is a splendid place for game. Several bunches of caribou were seen and, snow-fall occurring soon after our advent, it was a surprise to see the very net-work of foot-prints on the newly fallen surface: cariboo singly and in lots, grizzly and brown bear, fox, wolf, porcupine, martin, marmot, and all the small mammals. Truly, if one can only efface one's self in the apparent solitudes, it will be found that there is much going on around you."

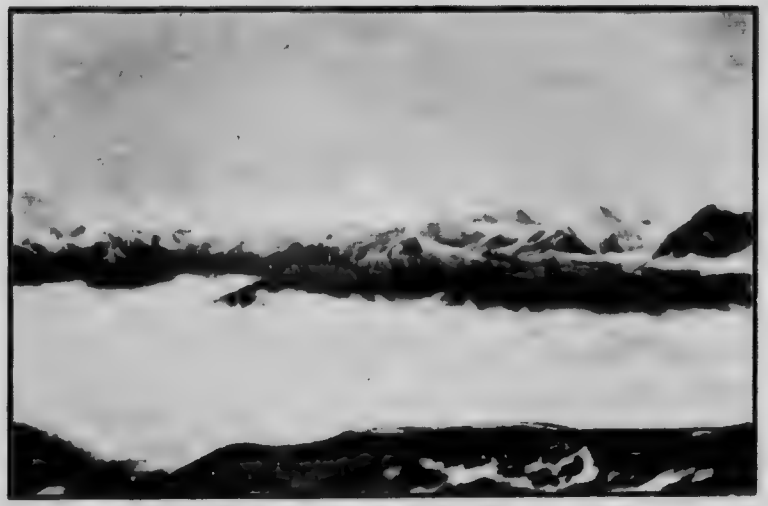
Baloo Pass—Name: By Topographical Survey with reference to Bear Creek (Baloo, Indian for bear).

Altitude: 6,681 ft.

Location: At the head of Beaver Creek Valley, north-westerly from Glacier House and leading to the Upper Valley of Cougar Brook.

Route: A pony trail up Bear Creek Valley leads over the Pass and connects with the trail in Cougar Valley near the Caves of Cheops (Nakimu Caves).

Time required: The round trip can be made in one day, either by saddle-pony or on foot, though it is more comfortable to take two



Selkirk Mts. above the clouds, from Dogtooth Mts.

Mt. Sir Donald from Bald Mt. An unfamiliar side.

days, spending a night at the Caves. Owing to the varied and striking scenery along the entire route, the expedition is one of deep interest. It may be made either way: starting from Glacier and going to Rogers Pass, then up Bear Creek, over the Pass and return down Cougar Creek and the trail to Glacier; or vice-versa.

Distance: The route encircles Mt. Cheops and is about 15 miles long, as follows: Glacier to Roger's Pass, 3 miles; Roger's Pass to Caves, 5½ miles; Caves to Glacier, 6½ miles. In hot weather Roger's Pass and Bear Creek make the best going route, being cooler for the heat of the day.

A Swiss guide is not necessary but it is better for ladies riding the circuit to have a guide. To avoid trouble be sure to make an early start. On the north side of Baloo Pass a long easy shoulder of broken rock leads to the sharp peaked summit of Mt. Ursus Major; on the east side a trail takes you to the crest of the north-west shoulder of Mt. Cheops from which the summit is readily reached.

Baloo Pass is open upland with outcrops of glaciated rock. It is bordered on its south-west side by forest. The alpine flowers follow each other: in season the ground being gay with pink and white heath; in August the east slopes are thickly covered with the large and delicate yellow dog-tooth violet (*Erythronium giganteum*) which flowers in the Selkirks from June to August according to the elevation. Near the summit of the pass, on its western slope is an excellent sheltered site for a camp, with plenty of wood and water near by.

Battle Glaciers—Name: By Topographical Survey with reference to Battle Creek.

Altitude: 5,700—9,500 feet.

Location: At the head of Battle Creek between Mts. Purity, Kilpatrick, Wheeler and Grand Mt. These are two unusual and very interesting glaciers, the western one flowing from immense snow-deposits lying between Mts. Purity and Kilpatrick, and the eastern one from like deposits between Mt. Wheeler and Grand Mt. They soon converge and form a broad stream of ice flowing down the valley for 2½ miles. Having no névés (snowfields) at their heads and being fed by hanging glaciers, Battle Glaciers belong to the type called Piedmont. No other glaciers in the Selkirks afford so striking an example of this process of nourishment. The glacierettes feeding Battle Glaciers hang in fantastic confusion along the upper rock walls, those on the western walls of the valley being of marvellous beauty and wild irregularity of form. Owing to numerous flows of ice that come together not far distant from their heads, the main glacier presents three well formed medial moraines, which parallel each other for the entire length of the main flow. It is smooth and easily travelled below the convergence.

Distance: Two days' journey south-easterly from Glacier House.

Route: To reach Battle Glaciers, it is necessary to cross the Asulkan, Donkin and Purity Passes to the head of the western glacier. A second route is to ascend Bishop's Glacier from the foot of Donkin Pass and by way of the Deville Névé, then to cross between Mts. Wheeler and Kilpatrick.

Time required: This expedition involves several nights out. Unless skilled in mountaineering, a guide is necessary.

Battle Creek—Name: Local, owing to a fight between a prospector and a grizzly bear.

Location: Tributary to Incomappleux River (Fish Creek) from the east. Its source is in Battle Glaciers.

Battle Spring—Name: In relation to Battle Creek.

Location: On the east side of Incomappleux River, about a mile south of Battle Creek. This is a curious spring of unusual size—about 20 feet across—with a bottom of disintegrated granite which the action of the water keeps boiling up, presenting a milky appearance.

Bear Creek—Name: Local, owing to the prevalence of bears in its valley.

Altitude: 2,900—7,000 feet.

Location: From sources in Baloo and Bruin's Passes, Bear Creek flows north-easterly along the south base of the Hermit Range with Mts. Ursus Minor and Grizzly of that Range on the north, and Mt. Cheops on the south. It then flows through Rogers Pass between Mts. Macdonald and Tupper, and joins Beaver River about one mile south-east of Bear Creek Station on the railway. This part of the stream is through a narrow defile, rugged and awe-inspiring in the extreme. On the south Mt. Macdonald, riven by great scaurs banked with snow, rises a full mile above the railway track. On the northern or Tupper side, the railway passes along a shelf carved from the excessively steep slopes. Here for six miles consecutive snowsheds protect the line from avalanches which may descend from either mountain. Those from Mt. Macdonald are by far the most destructive, crossing the stream and rebounding up the steep sides of Mt. Tupper for a considerable distance.

Above Rogers Pass, Bear Creek Valley widens out in a wild and interesting landscape. Great precipices descend sheer from Mt. Cheops and enormous masses of naturally quarried stone lie at its base; darkly wooded buttresses extend from the mountains to the north, silver cascades slip from great heights to the valley below. In the floor of the valley itself stand prodigious islands of rock, whole brotherhoods of spruce growing out of the scant soil on their summits. Around their bases are caves once bear-dens, but since the advent of the tourist the home of the hoary marmot, whose sudden shrill resounding whistle with its uncanny human note is enough to make one's hair stand on end. Near the head of the valley are twin cataracts, smaller but resembling in grandeur the more celebrated Twin Falls of the Yoho valley.

Route: A pony-trail leads from Rogers Pass up Bear Creek and over Baloo Pass to the Cougar Valley.

Bear Creek Station—Name: By C.P.R. Company, with reference to Bear Creek.

Altitude: 3,673 feet, rail level.

Location: The station is about one mile westerly from the eastern entrance to Rogers Pass, and the same distance north-westerly from the junction of Bear Creek and Beaver river.

Bear Falls—Name: By Howard Douglas, Commissioner of Dominion parks.

Altitude: 5,500 ft.

Location: Immediately east of Goat Falls in Cougar Valley; a stream from Mt. Ursus Major and drops over the same ledge as the Goat Falls and flows to meet the waters of Cougar Brook where they emerge from the subterranean passage through the Caves of Cheops, They are very picturesque. (See Caves of Cheops.)

Beaver Mt.—Name: By Messrs. Huber, Topham and Forster, with reference to Beaver River.

Altitude: 10,644 feet.

Location: At the head of Beaver Glacier, source of the Beaver River; in the Battle Range and 17 miles from Glacier House as the crow flies. It is a fine rock peak still unclimbed (1911).

Route: Reached by pony trail up the Beaver River Valley to Beaver Glacier; thence ascending the glacier to the foot of the mountain—the distance by trail, 42 miles.

Time required: Several days' travel; for the round trip, at least 6 days of fine weather. A camp outfit is necessary.

Beaver Glacier—Name: By Messrs. Huber, Topham and Forster, with reference to Beaver River.

Altitude: 4,700—8,900 feet.

Location: At the head of Beaver River whose source it is. A peculiarity of this glacier is that at times of extreme melting a channel carries some of the water southward to the Duncan River on the opposite side of the Beaver-Duncan Pass. It was first ascended by Huber, Topham and Forster in 1890. It may be reached by the Beaver River trail but requires a camp outfit and several days of travel.

Beaver Overlook—Name: By Topographical Survey, from its magnificent overlook both up and down the Beaver Valley.

Altitude: 9,901 feet.

Location: On the west side of the valley at the head of Deville Névé.

Route: From Glacier House the route lies over the Asulkan and Donkin Passes, up the Bishop's Glacier and across the Deville Névé to its south-east corner.

Time required: Three days if both weather and snow are in good condition. Unless skilled in mountaineering, a guide is necessary.

First Ascent: By the Topographical Survey in 1902.

View: From the Beaver Overlook the entire Beaver valley is seen as though laid out on a map—meadows, forests and windfalls, with the green, glacial waters of the stream winding onward in serpentine loops. Also, there is a very fine view of Bald Mountain and the Spillimacheen Ranges.

Beaver River—Name: Local, from the great number of beavers that once inhabited the valley—no longer plentiful.

Altitude: 2,400—4,600 feet. Length from its source to its mouth on the Columbia hard by the railway, about 50 miles.

Location: Beaver River flows in a deep, wide valley immediately below the eastern escarpment of the Selkirk's Summit, which it parallels. Its primary source is from Beaver Glacier, described above. On the south side of the low pass at its head is the source of the Duncan River which flows south oppositely in a valley continuing the

direction of the Beaver Valley. That is, the Beaver flows north-west, and the Duncan south-east. The two together form what is known as the Purcell Trough, extending for nearly 100 miles in a north-west and south-east direction parallel to the axis of the Selkirk Range. Beaver Valley is remarkable for its luxuriant vegetation and heavy growth of fir, hemlock and spruce. Devil's club (*prickly aralia*) and skunk cabbage grow in dense profusion. The beautiful forests on the floor of the valley are interspersed with open marshy meadows of bright green. These and the sinuous, milky river make striking though harmonious contrast in color. Much of the timber on the mountain slopes, where the valley is traversed by the railway, has been burned during construction days; and now nothing remains of these grand forests but an unsightly array of gaunt skeletons and fallen giants. Fires are the bane of the mountains. Since the advent of the railway, forests containing trees centuries old have been destroyed; and though a fresh growth may soon spring up, a generation must go by ere the desolate tracts are reforested. For 1,000 feet up these burnt slopes huckleberry bushes grow bearing prodigally in the season.

The Beaver joins the Columbia more than a mile from Beavermouth Station on the railway. Close by this point the railway swings out of the Columbia Valley and ascends the Beaver Valley, making an ascent of 1,000 feet in sixteen miles. It then turns up the valley of Bear Creek to cross the Selkirks by Rogers Pass. The first two miles up the Beaver is in a canyon, where the waters rush through a narrow gorge, known as a "box canyon." Here the strata are tilted in knife-edges and the river, foaming between the slabs, is wildly picturesque. Emerging from this canyon, the railway overlooks the valley as described above. In the early days of construction, first a pony trail and then a waggon road were built up this part of the valley, but are now fallen into disuse.

From Beaver Creek Station to the source of the stream a good pony trail still exists, though frequently impeded by fallen timber. There are many places of striking interest, such as: The Gateway, Mountain Creek Crossing, Cedar Creek Crossing, Surprise Creek Bridge, Stony Creek Bridge. From mouth to source, however, is an endless galaxy of spectacular mountain effects that cannot be surpassed in the entire system. Should the Government or the Railway Company provide for the upkeep of suitable trails, it would be quite easy to go from the Beaver Valley on to the Prairie Hills and return by Grizzly Creek, making a round excursion, attractive and interesting and comfortable for persons unable for mountaineering.

Bishop's Range—Name: By Topographical Survey with reference to the contour of its two highest peaks. Seen from Donkin Pass, these peaks combine in resemblance to an episcopal mitre.

Altitude: 10,762 feet.

Location: Ten miles south-easterly from Glacier, immediately south of the Dawson Range.

Route: Reached via Asulkan Pass, Dawson Glacier, Donkin Pass, Bishop's Glacier.

Time required: Three days of good weather, two nights out. Route inaccessible to ponies; outfit must be carried. The two highest peaks are Cyprian (10,712 feet) and Augustine (10,762).

First Ascent of Cyprian: By Messrs. Holway, Butters and Palmer in 1908.

First Ascent of Augustine: By the same party in 1909. (See Canadian Alpine Journal, Vol. II., Nos. 1 and 2.) Unless skilled mountaineers, a guide is necessary.

Bishop's Glacier—Name: By Topographical Survey, in relation to Bishop's Range.

Altitude: 7,000—8,500 ft.

Location: Flows westerly between the Dawson Range and the Bishop's Range, and is the source of Mitre Creek. A smooth easy glacier to travel over, very little crevassed. Between Cyprian Peak and Mt. Selwyn of the Dawson Range is the height of snow, and from that point easterly the glacier falls to the Deville Glacier of which it is a tributary.

Route: The route to the glacier is the same as to the Bishop's Range. Unless skilled in mountaineering a guide is necessary.

Black Creek—Name: By Topographical Survey, in relation to Black Glacier.

Location: Drains Black Glacier on the south side of the Bishop's Range; joins Mitre Creek and then Van Horne Brook, which empties into Incomappleux River (Fish Creek).

Black Glacier—Name: By Topographical Survey (formerly Dirty Glacier), owing to its surface being thickly covered by glacier-mud and morainal débris.

Altitude: 6,500—9,300 feet.

Location: Directly south of Bishop's Range, and formed by the confluence of two glaciers lying on the north slopes of Purity Range. It shows a well developed medial moraine. The pass at the head of the most easterly glacier leads to the Deville Névé. It is directly below Mt. Kilpatrick.

Bonney Mt.—Name: By W. S. Green after the Rev. T. G. Bonney, F.R.S., Professor of University College, London, and at that time President of the Alpine Club (England).

Altitude: 10,205 feet.

Location: 4¾ miles south-west of Glacier.

First Ascent: By W. S. Green and the Rev. H. Swanzy in 1888. (See Green's "Among the Selkirk Glaciers.")

First Ascent by a lady: Henrietta L. Tuzo with guide Christian Bohren in 1904. (See Wheeler's "Selkirk Range.")

Route: The summit may be reached by two routes. (1) By Mt. Abbott: skirt Mt. Afton, cross the Lily Glacier, ascend Bonney Glacier to the col between Mt. Swanzy and Clarke's Peak; then follow the ridge over Clarke's Peak to the summit. (2) Follow the railway to Loop Brook; ascend that stream until opposite Green's Glacier; ascend Green's Glacier to the col and follow the ridge to the summit. When making the ascent by this route, Messrs. Green and Swanzy camped in the valley of Loop Brook. There is a prominent little sharp peak showing on the sky-line between the col and the summit of the mountain. Green and Swanzy experienced some difficulty in passing this point and pronounced it decidedly dangerous.

The second ascent (by a lady) was made by Gertrude E. Benham with guide Edouard Feuz, Senior, by the Green-Swanzy route. They

spent one night out, being unable to make the hotel before the darkness fell. (See Wheeler's "Selkirk Range.")

Mt. Bonney is a very striking peak. On the north face it presents a bold precipitous rock-escarpment, often clad with ice; on the south side it is a snow-white mountain with a wide area of névé covering its entire surface.

A third route: On this side it can readily be ascended from the valley of the Incomappleux River (Fish Creek), but it is a very round-about route.

Time required: Miss Tuzo and her guide made the round ascent in 19 hours by the first route. The second route may involve a night out, as above.

Bonney Glacier—Name: In relation to Mt. Bonney.

Altitude: 5,000—8,000 feet.

Location: On the north side below the great rock-escarpment of Mt. Bonney. It is very much broken and crevassed, with numerous groups of fine sêracs. It is the main source of Loop Brook, flowing into the Illecillewaet River at the famous C.P.R. loop of the railway in the Selkirks. It is a very pronounced form of the Piedmont type of glacier, being fed entirely by the snow falling on its surface and by ice avalanches from the cliffs of the cirque or amphitheatre surrounding it.

Bruin's Pass—Name: By Topographical Survey. in relation to Bear Creek.

Altitude: 8,150 feet.

Location: A pass in the Hermit Range at the extreme head of Bear Creek between Mts. Ursus Major and Ursus Minor and leads to a glacier on the north-east slopes of Mt. Ursus Major, which drains into one of the large southern tributaries of Mountain Creek.

The Camels—Name: By Miss M. Vaux. Peculiarly shaped rocks on the summit of Mt. Tupper resembling, when seen from Mt. Abbott, a string of loaded camels with their drivers beside them.

Caribou Creek—Name: Local, from the deer of that species which once frequented the valley.

Location: A tributary of the Illecillewaet from the north-west, joining the river 10 miles west of Glacier House. The valley of Caribou Creek, the valley of Downie Creek still further north-west, and the valleys of Flat Creek and Incomappleux River south of the railway, together form one of the great lateral troughs traversing the Selkirk Range parallel to its axis.

Cascade Summer House—Altitude: 5,252 feet (above Glacier House, 1,200 feet). Built by the C. P. Railway Company at the point where the Cascade, directly opposite Glacier House, breaks over the edge of the Mt. Avalanche amphitheatre.

Route: A good pony trail leaves the railway track at a sign-post 200 yards from the hotel and zigzags through a beautiful climbing forest up the mountain side. About 700 feet up there is one of the best views in the region of the Illecillewaet Glacier, where you are looking on its front. About three-quarters of an hour from the railway track the trail divides, the lower fork leading to the basin, some 400 feet higher. the fine meadow with streams and already described as rich in alpine flora.

Views: The Summer House commands magnificient views of this

great glacier once known as the Great Glacier of the Selkirks, of Mt. Abbott and of Mt. Bonney; and overlooks the Valley of the Illecillewaet for many miles. Although somewhat steep, this is one of the easiest excursions from Glacier House, and many times over repays the exertion. All visitors who can, ought to include it in the itinerary of the district.

Time required: For the round excursion, including Avalanche Basin, 3 hours.

Cascade, The, I.—Location: Opposite Glacier House. Fed by Streams from small glaciers below Mt. Avalanche (see above) and falls steeply 1,200 feet to join the river below. Throughout the stillness of the summer night music fills the glen, "a cataract blowing its trumpet from the steep," perfectly illustrating Wordsworth's familiar line. Once a lady tourist of uncertain age and temper, complaining querulously to the manager of the hotel, that the fountain in the grounds disturbed her sleep and must be turned off, he assured her that it was always turned off at night. "I shall try to-night," he added sympathetically, "to turn off the Cascade, the real disturber of your dreams." The lady's saving sense of humor was proved in the sequel.

Cascade, The. II.—Location: On the north side of Bear Creek Valley between snowsheds No. 3 and No. 4 on the railway, 2 miles from Bear Creek Station. Its source is in the snows of Mt. Tupper, and it rushes down under a stone bridge on the track.

Route: A two hours' tramp east on the railway from Glacier House and well worth a visit on hot days when melting snows swell its waters. The trail, which gives continuous beautiful views, leads over the snowsheds and through the woods as far as Rogers Pass Station.

Castor Peak—Name: By Messrs. Abbott, Fay and Thompson, with reference to Castor and Pollux of heathen mythology.

Altitude: 9,108 feet.

Location: On the west side of the Asulkan Valley between the Asulkan and Swanzy Glaciers.

First Ascent: By Messrs. Abbott, Fay and Thompson in 1895.

Route from Glacier: (1) By ascent of Mt. Abbott and a traverse of the western slopes of Mt. Afton, the Rampart, and the Dome.

Time required: 6 hours.

Route from Glacier: (2) By ascent of the Asulkan Glacier from the head of the Asulkan Valley.

Time required: 4-5 hours. In either case a return may be made by the alternative route. A rock climb. Unless skilled in mountaineering one guide is necessary.

View: The summit commands excellent views of the Asulkan Valley, Mt. Sir Donald and the south slope of Rogers Pass; to the west, the Swanzy and Clarke Glaciers and the blue depths of the Incomappleux Valley; and south, the Dawson Range with many spectacular effects.

Catamount Peak—Name: By the Topographical Survey, with reference to Cougar Brook.

Altitude: 8,956 feet.

Location: Easterly of two high peaks on the north side of Cougar Brook near its head.

First Ascent: By Topographical Survey in 1902.

Route: (1) By Rogers Pass, Bear Creek and Baloo Pass, thence traversing high up on the slopes of Cougar Brook Valley.

(2) By Loop Trail, Cougar Valley Trail, past the Caves of Cheops, and thence ascending from directly below the peaks.

Time required: By route (1), a long day; by route (2) 3 hours from the Caves. The ascent can be made more comfortably by spending the night in the cabin at the Caves. Unless a skilled climber, one guide is necessary.

View: Notable views from this summit are Cougar Creek Valley and the southerly Valley of Mountain Creek.

Cedar Station—Name: By the C.P.R. Company, with reference to Cedar Creek.

Altitude: Rail-level, 3,188 feet. A station of the C.P.R. on the west side of Beaver River Valley, 13½ miles northerly from Glacier.

Cedar Creek—Name: Local, with reference to cedars growing along its banks. A small mountain torrent joining the Beaver River close to Cedar Station.

Cheops Mt.—Name: By Otto J. Klotz, with reference to the Great Pyramid of Cheops, from the pyramidal form of its extreme peak.

Altitude : 8,506 feet.

Location: Immediately west of Rogers Pass summit, between Bear Creek and Illecillewaet River.

First Ascent: By S. E. S. Allen and W. D. Wilcox in 1902.

Route: (1) From Glacier House the route is generally straight from the summit of Rogers Pass. (2)—Another route is by Baloo Pass. (3)—And another is via Napoleon Shoulder.

Time required: Routes (1) and (3), 4 hours; route (2), 6 hours. Unless skilled climbers, one guide is necessary.

View: Owing to its central position and medium altitude, Mt. Cheops commands the most superb all-round view in the vicinity. The climb is especially recommended to photograph hunters. In every direction magnificent scenes may be taken by the camera. It is to be remembered that the sights from very high altitudes are interesting, chiefly for their wide expanse over high ranges. Only in clear and sunny air does a vast chaos of high snowy peaks present delicate indescribable color; and the valleys are hidden far below. The most beautiful mountain landscape is always that seen from lower and medium altitudes which disclose forest and stream and lake and the changing atmospheric hues of the lower valleys and wooded mountain-recesses.

In the immediate mountaineering district, Mt. Cheops is arbiter of the weather; and according to local tradition, there is no appeal from that arbitrament. A cloud upon this summit decides for rain. Once a young scoffer set out for Mt. Rogers in defiance of this omen and found himself short of its crest in a steady rain that lasted two days. He returned to the hotel soaked to the skin.

Clarke Peak—Name: By the Topographical Survey after Charles Clarke, a Swiss guide, stationed at Glacier in 1902.

Altitude: 9,954 feet.

Location: A peak of the Bonney Cirque lying between Mt. Bonney and Mt. Swanzy and belonging to the Bonney massif.

First Ascent: By the Topographical Survey in 1902.

First Ascent by a Lady: Miss Henrietta L. Tuzo in 1904.

Route: (1) Reached from Glacier via Mt. Abbott, the north slopes of Mt. Afton, Lily Glacier and Col, and Mt. Swanzy; (2) via Bonney Glacier and up the wall.

Time required: 17 hours. One guide is necessary. Climb: rock, snow and ice.

View: Exceptionally fine views of the Incomappleux Valley, of Bonney Amphitheatre and of Rogers Pass.

Clarke Glacier—Name: By Topographical Survey in relation to Clarke Peak.

Altitude: 6,500 feet—10,000 feet.

Location: On the west slopes of Geikie Creek Valley directly south of Clarke Peak; separated on the east from the Swanzy Glacier by a rock-ridge, partly snow-covered. It drains to Geikie Creek.

Area: About 2 square miles.

Route: Reached from Glacier House by the route to Mt. Swanzy and Clarke Peak.

Time required: 5½ hours. Unless skilled in mountaineering, a guide is necessary.

Cougar Brook—Name: Local, owing to cougars or mountain lions by which its valley was said to have been frequented.

Altitude: 3,500 feet—7,000 feet.

Location: Joins the Illecillewaet River from the north, 3½ miles west of Glacier station. It is a valley of surpassing interest. It may be divided into the upper and lower valleys; the former a perfect speciment of a U-shaped, glacier-carved hanging valley; the latter of a V-shaped, water-eroded trough. For the first 2½ miles of its course, the stream fed by glaciers lining the valley's sides, races down in a series of cascades, and suddenly, without the slightest warning, disappears in the ground. Here are situated the Caves of Cheops (Nakimu Caves). From this point the course of the stream is underground, re-appearing at three intervals, for very nearly a mile. (See under Caves of Cheops). At the Caves the valley takes a sharp bend to the south-east. Here there is a very distinct step marking the change from the hanging valley to the sharp-cut water-eroded trough below. The stream finally re-appears from its underground course nearly half a mile below this step. Immediately above the step is a prominent rock, jutting out over space, known as Point Lookout, where there is a splendid view. Catamount Peak, Mt. Bagheera and McGill Peak on the north side of the upper valley are attractive mountains to the mountaineer. The cliff-glaciers lining the sides of the valley are of special interest to the geologist; also the rock-formation at its extreme head, where great slabs of white quartzite like quarried tombstones, are piled on one another in wild confusion. The flora of the upper valley is specially interesting as the species are numerous and lavish and make spectacular display of color.

Route: The trail begins near the hotel, on the north side of

the Illecillewaet River following an old "tote" road, used in construction days. Passing through rich forests of cedar, fir and hemlock, it skirts the base of Mt. Cheops for 3 miles, touching the railway at the Loop and not again until near the water-tank at the entrance of Cougar Valley, when it winds high on the slopes of Mt. Cheops, east of Cougar Brook. Before reaching the Caves, the trail forks, one leading to Baloo Pass to meet the trail in Bear Creek.

View: All along the valley are wonderful views of far and near mountains and glaciers, changing with the winding of the high trail. None should miss a visit to this valley. A carriage drive is being built.

Time required: Should the excursion include Baloo Pass and Bear Creek, one day will suffice. S. H. Baker, the outfitter at Glacier, recommends the following route: Leave the hotel at 9 a.m., taking the coolest route in the heat of the day—Rogers Pass, through the woods of Bear Creek, over the wind-blown Baloo Summit, arriving at the Caves about 12.30; half an hour to stretch limbs; then lunch and a visit to the Caves, leaving by 3.30 p.m. and riding down Cougar Valley when the day is growing cool to reach the Hotel by 6.30, in plenty of time to dress for dinner. The round excursion with pony and guide (not Swiss) costs $4.00.

Cougar Mt.—Name: With reference to Cougar Brook.
Altitude: 7,882 feet.

Location: Immediately south and west of Cougar Brook.
First Ascent: By F. E. Weiss and Mrs. E. S. Weiss with guide Edouard Feuz, Sr.

Route: The ascent can be made from almost any immediate point.

Time required: The highest point can be reached in 5 hours from Glacier. Though a comparatively easy rock-climb, novices ought to take a Swiss guide. The mountain has a long serrated summit extending westerly to Caribou Creek. Its most interesting feature is the pyramidal face of smooth rock on its east side, conspicuous from many points of view.

Cheops. of Caves (Nakimu Caves)—Name: Original name by Topopgraphical Survey, with reference to Mt. Cheops within whose base they are situated. Subsequently, for some unknown reason, it was changed to Nakimu Caves, and the name has been adopted by the Geographic Board of Canada. The word "Nakimu" is said to be Indian, meaning "spirits," and to have reference to noises that issue from their subterranean waters.

Altitude: 5,100—5,600 feet.

Location: At the bend of Cougar Brook where the upper and lower valleys join. They extend into the south slopes of Mts. Ursus Major and Cheops and into the north slopes of Cougar Mt. At the point where the Caves are formed is a bed of crystalline limestone, which would appear to have been shattered by some seismic disturbance in a previous age. At a certain point in the valley the stream disappears under ground, re-appearing again some 400 or 500 feet farther on. The intervening space is called Gopher Bridge from the great number of little Parry marmots making their homes in the ground there. All about are their well-beaten trails, miniatures of the paths made by men and big game.

The overground between a second disappearance and re-appearance of the stream is called Mill Bridge from the subterranean noises as of a gigantic mill in operation. The stream now appears at the bottom of a deep rut called the Gorge and finally disappears into the bowels of the mountain.

For half a mile the subterranean stream has carved out a series of passages, gradually sinking to lower levels and leaving a tier of galleries and winding corriders above. They are dark and wet and very difficult to travel, owing to débris dropped from the roofs to their floors; and they are intersected by precipices and dangerous cracks. No one can safely or possibly enter these underground passages without the official guide, who is employed by the Government to be here during the summer months. The rock is a marbleized limestone, varying in color from very dark blue, almost black, shot with ribbons of calcite, through varying shades of grey to almost white. There are no stalactites or stalagmites worthy of the name. Geologically these caverns are of much interest owing to the very marked pot-hole formation throughout.

Route: By the Loop and Cougar pony trail as described above.

Time required: The expedition can be made easily in one day, including the excursions via Baloo Pass and Bear Creek. Those wishing to make a thorough examination of the valley and the caves are advised to spend a night at the cabin, although the accommodation (1911) is not good. (See Monograph on the Caves.)

Cyprian Peak—Name: By the Topographical Survey after "Cyprian," Bishop of Carthage in the year 248; with reference to the Bishop's Range.

Altitude: 10,712 feet.

Location: The westerly of the two highest peaks of that range, Augustine, 10,762 feet, being the higher one.

First Ascent: By Messrs. Holway, Butters and Palmer in 1908. The ascent was made from the Black Glacier. A rock climb of no great difficulty. For inexperienced climbers a guide is necessary.

Route: Reached from Glacier House via Asulkan and Donkin Passes. The ascent may be made either from the Bishop's Glacier, or by crossing the western end of Bishop's Range from Black Glacier as in the present case.

View: From the summit there are very fine views of Purity and Dawson Ranges.

Time required: The expedition requires three days of fine weather and two nights out at a camp on Mitre Creek flowing from Bishops Glacier. All camp outfit must be carried on human shoulders. Porters are available.

Copperstain Peak—Name: By the Topographical Survey with reference to traces of copper ore found among its rocks.

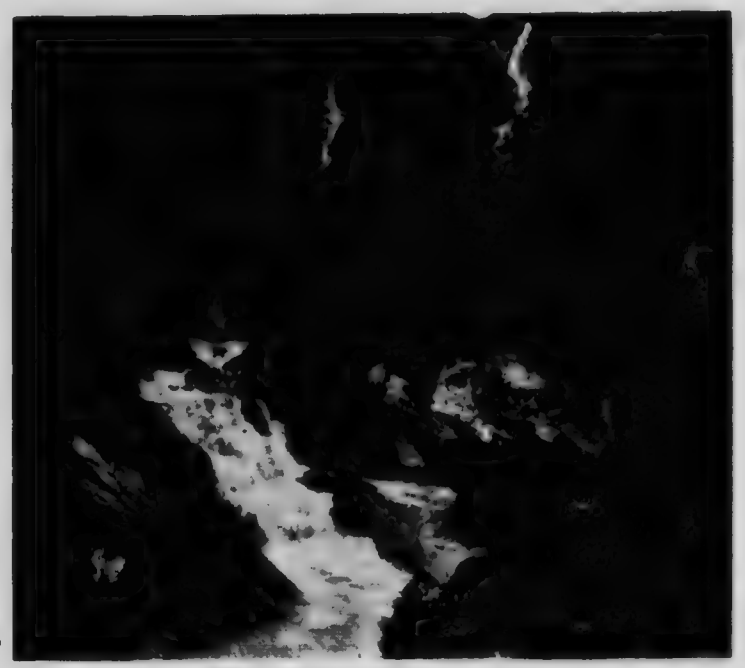
Altitude: 8,613 feet.

Location: On the east side of the pass at the head of the west branch of Grizzly Creek and north branch of Spillimacheen River. A long peak, easy of ascent, with a number of mineral locations staked out along its base, opposite the pass.

Corbin Pass—Name: In relation to Corbin Peak.

Altitude: 6,650 feet.

Location: Between the north and south branch of the Illecille-



The Raceway and Flume. Caves

Looking down Cougar Lower Valley, Pt. Lookout on left

waet River directly north-west of Illecillewaet Village. A trail leads from the village over the pass to the Corbin Mine, situated on the south slopes of Corbin Peak. (See "Among the Selkirk Glaciers," by W. S. Green, Chap. XII.)

Corbin Peak—Name: After a prospector from Illecillewaet Village.

Altitude: 8,802 feet.

Location: A sharp pointed peak between Caribou Creek and the North Fork of the Illecillewaet River. It holds several small glaciers on its western slopes, and furnishes a firstrate viewpoint of the surrounding district, particularly of Fang Rock and the innumerable snowfields and glaciers at the head of the north fork of the Illecillewaet River and of Downie Creek on the opposite side of the divide.

Dawson Range The—Name: From Mt. Dawson, its highest mountain.

Location: On the south side of the Illecillewaet Névé, Geikie Glacier, and Geikie Creek. The Dawson Range is a minor sub-range of the Selkirks, comprising Mts. Fox, Selwyn, Dawson and Donkin, a bold group of mountains with splendours of snow and ice. A number of extremely interesting glaciers have their origin in this range, sending streams east to the Beaver River and west to the Incomappleux (Fish Creek). The Dawson and Donkin Glaciers form a striking example of the double cirque. The Donkin Pass is between Mts. Dawson and Donkin. From the Asulkan Pass, the range presents wildly spectacular effects, and photographers are recommended to this point of vantage.

Dawson Mt.—Name: By W. S. Green, after the late George M. Dawson, D.S., F.G.S., Director of the Geological Survey of Canada.

Altitude: 11,113 feet.

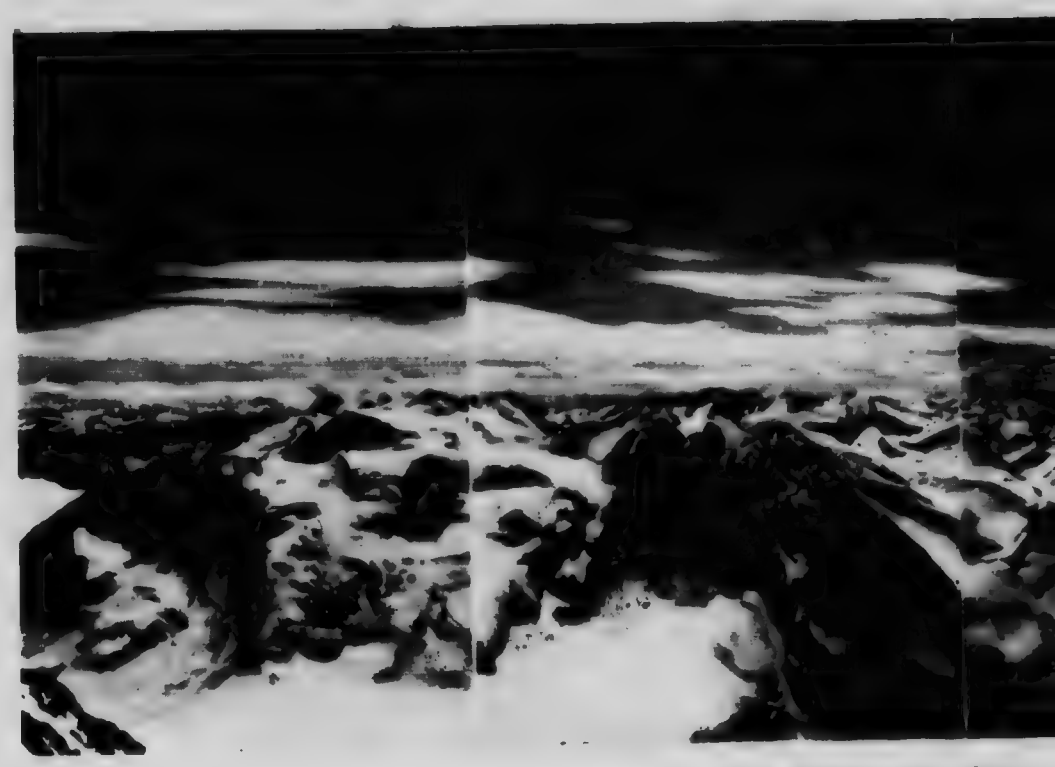
Location: The highest and central massif of the Dawson Range, comprising Hasler, Feuz, and Michel Peaks.

First Ascent (Hasler Peak): By Messrs. Fay and Parker in 1899.

Route: Reached from Glacier House via Asulkan Pass, Geikie Glacier, right moraine of Dawson Glacier, and east head-wall of Dawson Amphitheatre.

Time required: Two days, with camp one night at the foot of the moraine. The second day will be long and hard. It can be done more comfortably in three, with two nights out. The camp outfit must be carried on the shoulders. For inexperienced climbers one guide is necessary. As an alternative returning route, the ridge of Mt. Dawson may be traversed, passing from Hasler Peak over Feuz and Michel Peaks, and descending Donkin Glacier. In this case two guides are safer. Climb: rock and snow, with several ice-couloirs.

View: From the summit there is a magnificent view of the upper snow-world of the Selkirks. A chaos of shining snow fields and tumbling icefalls are everywhere. In his "Selkirk Range," Mr. Wheeler thus describes the sight from Mt. Dawson: "It is difficult to describe a scene of such immensity. The horizon plane cut clear above all other heights in the field. Snow peaks rose in every direction; but most prominent and attractive was the isolated and graceful form of Mt. Purity, some four miles to the south-west, ris-



Panorama looking south from su

from summit of Mt. Dawson

ing a pure white peak from surrounding fields of snow. Everywhere confluent glaciers sent their broken masses to the ice-rivers below. Jagged rock-walls, too steep to sustain a weight of snow, broke the monotony of white by their black outcrops. Peaks, glaciers, snow-fields, ridges and valleys reached to the furthermost distance, which was lost in a roll of billowy clouds."

Dawson Glacier—Name: In relation to Mt. Dawson.

Altitude: 5,500 to 10,000 feet.

Location: Between Mts. Dawson and Fox; falls steeply to join the Geikie Glacier, presenting a much shrunken snout covered with debris. The dry glacier is much crevassed. Near the lower extremity, it unites with the Donkin Glacier. A special feature is the long, symmetrical lines of its two lateral moraines, which like well-built levees confine its flow. Along the crest of these moraines are well-worn paths made by goats, which may frequently be seen trooping in single file to and from their feeding grounds.

Deville Mt.—Name changed to Selwyn (see Mt. Selwyn).

Deville Glacier and Névé—Name: In relation to Mt. Deville (Selwyn).

Altitude: 5,300—8,300 feet.

Location: Between Mts. Topham and Selwyn and extending southerly along the great escarpment of the Selkirks Summit to Grand Glaciers.

First traversed by Messrs. Huber, Topham and Forster in 1890.

Route: Reached from Glacier (1) via Glacier Circle and Bishop's Glacier; (2) from Beaver River Valley via Glacier Circle and Deville Glacier. This glacier is of extreme interest, presenting a perfect example of the Forbes dirt bands on a large scale. Soon after leaving the névé the glacier flows over a precipitous ledge and is broken into wide crevasses extending the entire width of the flow. The enormous shove from behind brings the ice together again, closing these great cracks; but, owing to the more rapid flow in the centre of the ice-river, they now form circular joins where the dust blown over the ice, collects and gives the dry glacier a graceful and fan-shaped appearance, outlined by dark circles. This is seen to particular advantage from the summit of Mt. Fox. The névé is about three miles long and has several arms extending westward, in all about six square miles. It connects by easy snow-passes with Bishop's Glacier and Black Glacier. The southern extremity overflows to the Grand Glaciers. The rocky rim along its eastern margin, with Mt. Topham at the northern extremity and Beaver Overlook at the southern, furnishes comprehensive view-points for the Beaver River Valley, the Spillimacheen Mountains, Bald Mt. and the Dogtooth Range.

The Dome—Name: By Messrs. Abbott, Fay and Thompson on account of its contour.

Altitude: 9,029 feet.

Location: A peak of the western escarpment of the Asulkan Valley, between Castor and The Rampart.

First Ascent: By Messrs. H. B. Dixon, A. Michael, C. L. Noyes, C. E. Fay, J. R. Van Derlip, with guide Peter Sarbach, in 1897.

Route: (1) Reached from Glacier, via Mt. Abbott, skirting Mt. Afton and traversing the slopes of the Rampart to the foot of the

Dome. A rock climb. Unless skilled in mountaineering, one guide is necessary. (2) A second route is by the Asulkan Valley, Asulkan Glacier and Sapphire Col. Unless skilled in mountaineering one guide is necessary.

Time required: 5 hours by the former route; 4 hours by the latter. The second route offers some good ice-work on the Asulkan Glacier.

View: North and east, Rogers Pass, Sir Donald, the Asulkan Valley and Glacier; south and west, the Valley of the Incomappleux (Fish Creek), Swanzy and Clarke Glaciers and the Swanzy-Bonney Massif.

Donkin Mt.—Name: By W. S. Green, after W. F. Donkin of the Alpine Club (England) who was killed in the Caucasus during the year Mr. Green made his exploration and survey in the Selkirk Range (1888).

Altitude: 9,694 feet.

Location: On the west side of Donkin Pass; the most westerly peak of the Dawson Range.

First Ascent: By H. W. Topham in 1890. A fine conical peak of easy ascent from the Donkin Pass. Climb: rock and snow.

Route: Reached from Glacier via the Asulkan and Donkin Passes. .

Time required: Two long days with one night out at the foot of Dawson Glacier. It can be done more satisfactorily in three days. Camp outfit must be carried on the shoulders. For novices, one guide is necessary.

View: Like Mt. Cheops, owing to its medium height and isolated central position, Mt. Donkin furnishes one of the finest panoramas obtainable. The view commands the Bishop's Range, notably the combination of its two peaks, Augustine and Cyprian, in their likeness to an episcopal mitre; also the Purity Range with a splendid view of the snowy mountain that names the range; and sweeps the valleys of Mitre Creek and Van Horne Brook showing Mt. McBean beyond to advantage. West and north are the Incomappleux Valley, the Bonney Névé and the entire Clarke and Swanzy Glaciers; and immediately east are the Donkin and Dawson Glaciers and Mt. Fox.

Donkin Pass—Name: In relation to Mt. Donkin.

Altitude: 8,556 feet.

Location: Between Mt. Donkin and Michel Peak of Mt. Dawson.

Route: The pass on its north side is difficult of ascent owing to an ice-wall and a heavily corniced crest. A traverse to the east side is the safest. The south face presents easy slopes of shale and grass.

First Ascent: By H. W. Topham in 1890.

Donkin Glacier—Name: In relation to Mt. Donkin.

Altitude: 6,700—8,000 feet.

Location: Below Donkin Pass on the north side, and fills the western portion of the double cirque of the Dawson-Donkin Glaciers. It is much crevassed but easy of ascent.

Route: The same as for Mt. Donkin; from Geikie Glacier, be-

low Asulkan Pass, follow right (east) moraine of Dawson Glacier and cross to Donkin Glacier near their junction.

First Ascent: By H. W. Topham in 1890. For novices, one guide is necessary.

Douglas Falls—Name: After Howard Douglas, Commissioner of Dominion Parks.

Altitude: 5,000 feet.

Location: On the same stream as Bear Falls but lower down. Very picturesque owing to the curious pothole erosion in the limestone rock bed. (See Caves of Cheops.)

Duncan Mt.—Name: By Messrs. Huber, Topham and Forster, in relation to the Duncan Glacier directly below it, which is the source of the Duncan River.

Altitude: 10,548 feet.

Location: At the head of the Duncan River on the west side of the Beaver-Duncan Valley. A fine rock peak, still virgin (1911) and probably difficult.

Route: Reached from Beaver-Duncan Pass by way of Duncan Glacier. The expedition is made by pony trail from Bear Creek Station up the Beaver Valley.

Time required: This is an expedition involving a week or more and requiring a full camp outfit and ponies to carry it. The region is little known. The summit must command superb views, sweeping the Spillimacheen Mountains and the Duncan and Beaver Valleys.

Duncan Glacier and Névé—Name: In relation to Duncan River.

Altitude: 5,000—10,000 feet.

Location: On the east side of Mt. Duncan and the source of the Duncan River; situated in a bold rock-cirque with precipitous sides.

Duncan River—Name: Origin unknown, probably given by some prospector. It has its source in the Duncan Glacier on the west side of the Beaver-Duncan Pass. It flows south-easterly some forty miles to Howser Lake, which, in turn, empties into Kootenay Lake. The pony-trail up the Beaver Valley extends over the Beaver-Duncan Pass and down the Duncan Valley to an old mining camp named West Fork, where it turns and follows a tributary stream. Below this point, Duncan Valley is impassable, owing to extensive marshes.

Eagle Peak—Name: With reference to a rock on the south-east arête which, seen from Glacier Station resembles an eagle perched on the side of the Peak.

Altitude: 9,353 feet.

Location: 1¾ miles north-east of Glacier; the central peak of the Sir Donald Range.

Route: Reached by the Avalanche Amphitheatre, the trail starting at the north end of the platform at Glacier Sation. On reaching the crest of the amphitheatre turn to the right and proceed to the peak. This is a good rock climb.

Time required: 4 hours. For novices a guide is necessary.

View: There are excellent views of the Illecillewaet Glacier and Névé, Asulkan Glacier and Névé, the Asulkan Valley and its confining ridges, the Illecillewaet Valley, the Hermit Range; and east-

ward, the lower Beaver Valley and Prairie Hills. Directly below on the east side are the Avalanche and Eagle Glaciers. Southward close at hand rises the sharp north-western arête of Mt. Sir Donald.

First Ascent: By S. E. S. Allen and W. D. Wilcox in 1893.

First Ascent by a lady: Miss Henrietta L. Tuzo in 1901.

Eagle Glacier—Name: By the Topographical Survey in relation to Eagle Peak.

Altitude: 5,000 feet—8,000 feet.

Location: Flows from the southern portion of Avalanche Névé; immediately north of the east arête of Uto Peak; on the western slopes of Beaver Valley, and draining to Beaver River. It is seen to best advantage from Bald Mt.

Route: The same as to Avalanche Névé.

Time required: 4½ hours. A guide is necessary for novices.

Fang Rock—Name: By the Topographical Survey.

Altitude: 9,302 feet.

Location: An isolated tooth-shaped pinnacle, rising above the ice of three surrounding glaciers on the west side of the north branch of the Illecillewaet River immediately adjacent to its valley.

Climb: Snow, ice and rock. It is most prominently seen from peaks of the Hermit Range, especially from Mt. Bagheera and Mt. McGill; also from Corbin Peak on the west side of Caribou Creek.

Feuz Peak—Name: By Professors Fay and Parker, after Edouard Feuz, Sr., of Interlaken, who has been employed at Glacier since 1899 and is now head guide (1911).

Altitude: 10,982 feet.

Location: The middle and second highest peak of Mt. Dawson.

First Ascent: By Edward Franzelin in 1908.

Route: (1) Reached by a traverse of Dawson Crest from Hasler Peak (for whole route see Mt. Dawson). (2) A second route is from Donkin Pass by ascent of Michel Peak and traverse of the crest to Feuz Peak. For novices two guides are safer. A rock-climb with several snow-couloirs.

Findhorn—Name: By the Topographical Survey.

Altitude: 9,501 feet.

Location: Southerly of the two peaks of Mt. McBean. There is no record of an ascent (1911). (For route see Mt. McBean.) It is chiefly a rock climb.

Fish Creek (Incomappleux River)—Name: English for the Indian "Incomappleux." One of the main water-outlets of the district.

Location: The principal southern overflow of the Illecillewaet Névé is by the Geikie Glacier; the glacier-torrent from its snout is known as the Geikie Creek until its junction with Van Horne Brook, and then as Incomappleux River or Fish Creek. From Geikie Glacier the stream flows south-westerly. It then describes a great arc and flows due south for 30 odd miles, discharging its waters into the north-east arm of Upper Arrow Lake. The upper course is in a deep, wild, and gloomy trough, providing some very impressive scenery. Just before the great arc is reached the stream pours through a box canyon with perpendicular walls.

Close to its mouth in Arrow Lake is the mining town of Camborne. From here back to the bend, the valley and its branches

Miss Canada

have been much worked by prospectors and a pony-trail extends northerly thus far, but at the bend it passes up along Jeopardy Slide and over Flat Creek Pass to the railway at Flat Creek. There is no trail from the bend to Geikie Glacier, on account of the canyon; but the passage can be made by keeping above the canyon on the south side. The travelling is very bad. The valley is much frequented by bears; and the slopes above, by wild goat.

Flat Creek—Name: Probably by a prospector, owing to a grassy flat near the Flat Creek Pass on the north side.

Location: The stream, which is about 6 miles long, flows north-westerly to the Illecillewaet River. At the confluence close to the C. P. Railway, a townsite was once laid out by the Government, owing to a mining boom in the Illecillewaet Valley. Only one cabin was erected, which was used as a store for miners' outfits. A pony trail leads up the valley on the east side and crossing Flat Creek Pass, descends Slick Creek and down the Incomappleux to Camborne. The valley is of little interest except as a route to the Incomappleux Valley and the valleys of Geikie Creek and Van Horne Brook.

Flat Creek Pass—Name: In relation to Flat Creek.

Altitude: 4,900 feet.

Location: Between the valley of Flat Creek flowing to the Illecillewaet River and the valley of Slick Creek flowing to Incomappleux River. A low wooded pass.

Fleming Peak—Name: By the Topographical Survey, after Sir Sandford Fleming, K.C.M.G., Hon. President of the Alpine Club of Canada.

Altitude: 10,370.

Location: One of the peaks of Mt. Rogers massif; adjoins Swiss Peak on the west.

Route: Reached by traverse along the crest from Rogers Peak over Grand Peak or directly from Swiss Peak. (For routes, etc., see Rogers Peak and Swiss Peak.)

First Ascent: By Gertrude E. Benham in 1904.

Time required: From Rogers hut, 4 hours; from Glacier, 7 hours. Usually a night is spent at Rogers hut in order to cross Rogers Glacier and Swiss Névé early while the snow is in good condition. For novices, one guide is necessary for a party of two.

Climb: Rock and snow. The round expedition can be made in a day, but a night at the hut is preferable, or a bivouac above the hut.

Fox, Mt.—Name: By W. S. Green, after Mr. Fox, a member of the Alpine Club (England) who lost his life climbing in the Caucasus during the year Mr. Green explored and surveyed the Selkirks around Glacier (1888).

Altitude: 10,576 feet.

Location: Most southerly peak of the Dawson Range, lying between Deville, Fox, Dawson and Geikie Glaciers.

First Ascent: By H. W. Topham in 1890. Mt. Fox is a blunted cone, partly covered by snow. Upon the north side two hanging glaciers send their fragments to the Geikie Glacier below. These are quite remarkable examples and may be seen to excellent advantage from the summit of the Asulkan Pass.

Route: Reached from Glacier via Asulkan Pass, Geikie Glacier,

right (east) moraine of Dawson Glacier; then up Dawson Glacier half a mile and a final climb to the summit over alpland and broken rock.

Time required: Two days with one night at the foot of Dawson Glacier; ascent from camp, 4 hours. The route could be made in one long day from Glacier. For novices one guide is necessary.

View: Mt. Fox commands a view of alpine splendour, the entire Illecillewaet Névé and Mt. Sir Donald rising at its northern extremity; westward sweeps the valley of Geikie Creek; and southward close at hand are the rock-precipices of Mt. Dawson, rising 3,000 feet almost sheer.

Fox Glacier—Name: In relation to Mt. Fox.

Altitude: 6,000—9,000 feet.

Location: Between Mts. Fox and Selwyn on the east side; it joins Deville Glacier in Glacier Circle.

Gateway, The—Name: By Topographical Survey, owing to the formation of rock-strata.

Location: 2 miles westerly along the railway from Beavermouth Station; on Beaver River, nearly 1½ miles south-westerly from its junction with the Columbia River. At this part of its course the bed of the Beaver River is much contracted and the stream flows turbulently in a rock-channel, with many leaps and falls. The strata of which the rock-bed is formed are at right angles to the course of the stream and lie absolutely vertical. The rock is of a quartzoze nature and in places unusually hard layers stand out like fences. At the Gateway, the slabs of rock are only four inches thick and twenty feet high, while the gap between is less than twenty feet wide. Through it the river pours, a mighty sluice-way. The gap is bridged by a single tree-trunk, which is used as a crossing by the men of the mountains, but is not recommended to the ordinary traveller.

Geikie Creek—Name: In relation to Geikie Glacier, which it drains.

Location: The primary source of Incomappleux River. The name Geikie Creek applies only as far as its junction with Van Horne Brook, 2½ miles below the snout of Geikie Glacier (see also under Fish Creek).

Geikie Glacier—Name: By W. S. Green, after Sir Archibald Geikie, F.R.S.

Altitude: 4,200—8,000 feet.

Location: Southern outflow of the Illecillewaet Névé, and flows between Asulkan Pass and Mt. Fox.

Route: Reached from Glacier via Asulkan Valley and Pass. The glacier flows directly below the pass at a depth of 2,800 feet. For novices one guide is necessary.

Time required: One long day from Glacier: but it is better to take two days, camping one night at the foot of the Dawson moraine. The Geikie Glacier is a good specimen of an ice-river and shows markedly the points of similarity between its flow and that of an ordinary river moving over a steep bed. The lines of crevasses, curving slightly outwards, indicate the more rapid movement of the centre of the stream. "The Geikie Glacier, filling the bottom of the valley, presented the most wonderful appearance. I never before

saw a glacier so completely broken up into pinnacles of ice by longitudinal and transverse crevasses crossing each other. It presented the appearance of some basaltic formation with blocks pulled a short distance asunder," (W. S. Green in "Among the Selkirk Glaciers").

Glacier Circle—Name: By Messrs. Huber, Topham and Forster, owing to the number of glaciers flowing into this hollow, encircled by peaks.

Altitude: 5,800– 6,000 feet.

Location: Surrounded by Mt. Macoun on the north; Mts. Fox and Selwyn on the west, and Mt. Topham on the south. A narrow opening between Mts. Macoun and Topham gives access from Beaver Valley. The Deville Glacier and its tributary, the Fox Glacier, flow in from the south, then outward towards the Beaver Valley between Topham and Macoun. A number of glaciers also overflow from the Illecillewaet Névé to the Circle.

First visited by H. W. Topham in 1890.

Glacier Circle is a strategic situation for both geologist and mountaineer. From a base-camp here, Mts. Macoun, Topham, Fox, Selwyn, Dawson, the Bishop's Range and the peaks surrounding the Deville Névé are all reachable. A camp-ground of sunlit parklands adorned with clumps of shapely spruce, with two green tarns reflecting the surrounding peaks, no more attractive place can be found for the study of glaciers of unusual interest.

Route: It may be reached from Glacier by ascending the Illecillewaet Glacier, traversing the full length of the névé to its southern extremity, and then descending to the Circle. In this case a guide is necessary for those unskilled in mountaineering. All camp outfit must be carried.

Time required: 8 hours. The best route, however, is by the Beaver Valley trail from Bear Creek Station where the camp outfit can be carried on ponies. Time required by this route, two days. A Swiss guide not necessary.

Glacier Crest—Name: By members of the Appalachian Club.

Altitude: 7,419 feet.

Location: A rock-ridge confining the Illecillewaet Glacier on the south-west; also, forming the northern extremity of the Asulkan Ridge.

Route: A path branches from the pony-trail up the Asulkan Valley a short distance beyond the first bridge and zigzags in a typical corkscrew trail to the crest of the ridge. It is too steep for ponies.

Goat Falls—Name: By Howard Douglas, Commissioner of Dominion Parks.

Altitude: 5,500 feet.

Location: A stream from the south slopes of Mt. Ursus Major drops over a ledge directly east of the Caves of Cheops in Cougar Brook Valley at the junction of the upper and lower valleys. They drop perpendicularly 40 feet, disappearing under the ground and join the subterranean waters of Cougar Creek within the Caves. (See Caves of Cheops.)

Gopher Falls—Name: By the Topographical Survey.

Location: Two streams come tumbling down the steep slopes of Cougar Valley from a glacier on the south-east face of Mt. Ursus

Major, directly opposite the point where Cougar Brook disappears for the first time into the Caves of Cheops. Near the centre of Gopher Bridge—the roof of the first series of the Caves—the two streams meet and disappear in the ground, joining Cougar Brook in its first underground flow. The place of their ingress has been named the Gopher Hole. Gopher Bridge is so called from the number of Parry marmots (*Spermophilus Parryii*)—a little animal not unlike the prairie gopher—that have their homes there in burrows in the ground (See monograph on Caves of Cheops).

Grand Glaciers—Name: By Huber, Topham and Forster, on account of their spectacular appearance.

Altitude—5,000—10,500 feet.

Location: On the west side of Beaver River Valley, between Mt. Sugar Loaf, Grand Mt. and Deville Névé.

First Ascent: By Messrs. Huber, Topham and Forster in 1890.

Route: (1) From Glacier via Asulkan Valley and Pass, Dawson Moraine, Donkin Pass, Bishop's Glacier and Deville Névé.

Time required: Including return, 3 days with 2 nights' camp on Mitre Creek, below Donkin Pass. All outfit must be carried. (2) By Beaver River trail from Bear Creek Station. Time: 5 days. Requires camp outfit and ponies. To go by the first route, or on the ice of the glaciers, novices should take a guide.

The Grand Glaciers spring from separate sources on either side of a great isolated central mass of rock and snow and then flow side by side, divided only by a well defined medial moraine. The central mass has been named "Grand Mountain." The glaciers are of exceptional interest, the northern one much broken and crevassed, showing wonderful sêracs and icefalls. The huge mounds and terraces of snow, softly modulated in light and shadow, surrounding the upper extremities of their ice, are very beautiful. They are distinctly two of the finest glaciers of the entire range.

Grand Mountain—Name: By the Topographical Survey in relation to Grand Glaciers.

Altitude: 10,832 feet.

Location: On the west side of Beaver Valley between Beaver Overlook and Mt. Sugarloaf, at the head of the Grand Glaciers, which it divides by a long shoulder extending easterly. The well-marked medial moraine between the two ice-flows extends from the end of this shoulder.

First Ascent: By Messrs. Holway and Parker in 1910.

Route: Reached from the south end of Deville Névé by traversing westerly above the ice-fall; then ascending the south shoulder of Mt. Wheeler, and following the snow-ridge to the peak. Climb: snow and rock. (For route from Glacier see Grand Glaciers.)

Time required: 18 hours from a camp on Mitre Creek below Donkin Pass; 4 days from Glacier including return. It can most comfortably be made by Beaver River trail (See Grand Glaciers), and ascent of Grand Glaciers to Deville Névé. A guide is necessary unless skilled in mountain-work.

View: Magnificent views of Mt. Sugar Loaf, Purity Range, Battle Glaciers, Van Horne Snowfield, and snowfields and glaciers reaching westward as far as the eye can see. Eastward across Beaver Valley are the Spillimacheen Mountains.

Grant Peak—Name: By the Topographical Survey, after the late Rev. Dr. Grant, Principal of Queen's University, Kingston, Canada.

Altitude: 10,216 feet.

Location: One of the peaks of the Mt. Rogers massif; adjoins Rogers Peak on the east.

Route: (1) By traverse along the crest from Rogers Peak; (2) by direct ascent from the Swiss Névé. (For first part of route see Rogers Peak and Swiss Peak.)

First Ascent: By Gertrude E. Benham in 1904. Climb: snow and rock. For novices a Swiss guide is necessary.

Time required: From Rogers hut via Rogers Peak, 6 hours; via the Swiss Névé, 5 hours. From Glacier to Rogers hut, 3-4 hours. Usually a night is spent at the hut in order to cross Rogers Glacier and Swiss Névé early while the snow is in good condition.

Green Mt.—Name: By the Topographical Survey, after W. S. Green, author of "Among the Selkirk Glaciers."

Altitude: 8,860 feet.

Location: On the west side of Loop Brook; the pivotal point of Mt. Bonney Ridge extending south-east and Ross Peak Ridge extending north-east.

First Ascent: By A. A. McCoubrey with guide Ernest Feuz in 1910, who climbed at the same time, the two unnamed virgin peaks between Mt. Green and Ross Peak.

Route: Reached from Glacier via the railway, Loop Brook, and Green Glacier.

Time required: 2 days; one night in camp in the valley of Loop Brook. For novices a Swiss guide is necessary.

View: It commands inclusive views of the Hermit Range, Bonney Amphitheatre, and miles of the Illecillewaet Valley looking westward and all that lies beyond it.

Green Glacier—Name: By the Topographical Survey with reference to Mt. Green.

Altitude: 6,000—9,000 feet.

Location: West of Loop Brook, of which it is a source, between Bonney Glacier and Mt. Green. It is only separated from Bonney Glacier by a medial moraine.

Grizzly Mt.—Name: With reference to Bear Creek.

Altitude: 9,061 feet.

Location: A peak of the Hermit Range on the north side of Bear Creek, immediately opposite Mt. Cheops on its south side.

First Ascent: By the Rev. J. E. Bushnell and Dr. A. Eggers in 1901.

Route: Reached from Glacier via railway to Rogers Pass, from whence it follows the trail up Bear Creek to a point opposite the mountain. Here the bed of a water course like a stairway leads to the alps above, and an easy scramble over rock brings the climber to the summit.

Time required: From Glacier, 4 hours. For novices, a Swiss guide is necessary.

View: Good views of Rogers Pass Valley, the Sir Donald Range, the Illecillewaet Glacier and Névé; northward the summit overlooks

the valley of Mountain Creek and its tributaries; also there is a distinct view of Mt. Sir Sandford so seldom seen.

Grizzly Creek—Name: Probably by a prospector with reference to grizzly bears, which at one time were very plentiful in its valley.

Location: Joins Beaver River from the east, 3½ miles south of Bear Creek Station. About 3 miles from its mouth the stream forks, the east branch leading to a divide at the head of Canyon Creek, which flows into the Columbia River near Golden. The West Branch leads south-easterly to a divide at the head of the North Branch of the Spillimacheen River. Near the mouth of the creek on the north side, an abandoned miner's trail branches from the Beaver River trail and leads up the creek for 1½ miles, where it crosses by a dilapidated bridge and climbs the mountain slopes to a thousand feet above the valley-bottom; then following the West Branch, crosses the divide and goes down the North Spillimacheen Valley, thus giving access to several mining claims opened up at Copperstain Mt. So long in disuse, this trail can only be found with much difficulty. That portion from the divide down the North Spillimacheen is in the better condition. The route gives access to Bald Mountain.

Hasler Peak—Name: By Messrs. Fay and Parker, after the Swiss guide, Christian Hasler.

Altitude: 11,113 feet.

Location: The most easterly peak of Mt. Dawson.

First Ascent: By Messrs. Fay and Parker with guides C. Hasler and E. Feuz, Sr., in 1899. (For routes, etc., see under Mt. Dawson.)

Hermit Range—Name: In relation to the Hermit on Mt. Tupper.

Altitude: 10,536 feet.

Location: Parallel to the C. P. Railway on the north and west sides, extending from Caribou Creek to Mountain Creek; lies between Beaver River, Bear Creek, Illecillewaet River, Caribou Creek and Mountain Creek. Also, it is the picturesque mountain range seen from Glacier House looking north. The north end of the Abbott Ridge commands a view of the entire range, except its eastern end which is hidden by the heights of the intervening Mt. Macdonald.

The Hermit Range presents a perfect alpine effect throughout the year. Above the climbing forests, between 30 and 40 glaciers line its crest and separate its individual units. It culminates in Rogers Peak (10,536 feet) of the Rogers massif. From this pivotal point, eight glaciers radiate like spokes of a wheel. Hermit Range dominates Rogers Pass and is one of the most attractive centres for mountain climbing and study in the immediate vicinity of Glacier.

Hermit Mt.—Name: By order in Council. Originally named "Stony Mt." At that time the present Mt. Tupper was known as Hermit Mt., so called with reference to a gendarme resembling a hermit on its western arête.

Altitude: 10,194 feet.

Location: Immediately east of the Rogers massif from which it is separated by a deep notch.

First Ascent: By the Revds. J. C. Herdman, S. H. Gray and A. M. Gordon in 1904.

Route: Reached from Glacier House in one long day. It is

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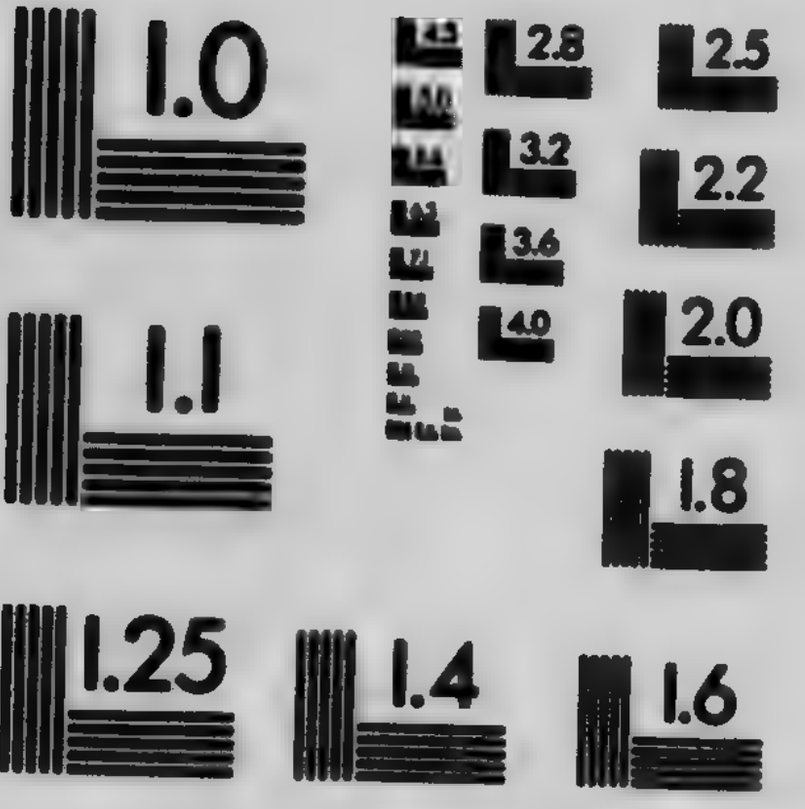

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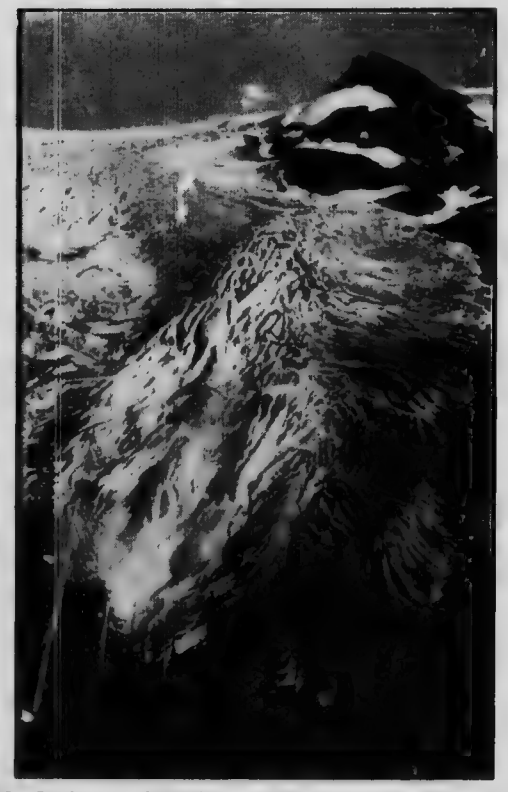


Mt. Lookout and Illicillewaet Glacier showing the Ice Fall

Cougar Brook Valley. Sir Donald and Illicillewaet Glacier in background

best to spend a night at Rogers hut and get away early to obtain good travelling on the snow. From the hut the route leads up Swiss Glacier and across the névé to the foot of the peak; the ascent is made by the south wall and is a good rock climb.

Time required: From the hut 5 hours to the summit; from Glacier to the hut 3-4 hours. For inexperienced persons one guide is necessary.

View: Commands glorious views of the Beaver Valley, Prairie Hills, Dogtooth Mts. and of the Mountain Creek Valleys and the peaks lying beyond, including Mt. Sandford. On a clear day, to the far north-east are also seen the highest peaks of the Rockies: Mt. Columbia, 60 miles distant, Mts. Bryce, Lyall, Forbes and many others.

Hermit, The—Name: From its resemblance.

Altitude: 8,887 feet.

Location: A rock-figure on the western arête of Mt. Tupper, resembling a hermit with a dog sitting at his feet. The Hermit shows very distinctly from Rogers Pass Station and the summit of the Pass. Seen from the opposite side, the figure one might say has the dignity and the presence of a cardinal. When making the ascent of Mt. Tupper by the west arête it is necessary to skirt the base of this gendarme.

Hermit Crest—Name: By the Topographical Survey in relation to Mt. Hermit.

Altitude: 9,010 feet.

Location: A flat crest of the ridge extending easterly from Mt. Hermit immediately above the Tupper Glacier.

Route: Reached by traversing the Swiss and Tupper Névés.

View: A splendid view-point for the Beaver River Valley looking north.

Horne Creek—(See Van Horne Creek).

Hermit Glacier—Name: By the Topographical Survey in relation to Mt. Hermit.

Altitude: 5,500—7,900 feet.

Location: Immediately below Hermit Mt. on the north side; lies between the north-east arête of Hermit Mt. and the south-east arête of Mt. Shaughnessy.

Route: Reached from Bear Creek Station by following the railway to Stony Creek Bridge and ascending the gorge of the stream to near its source; then turning to the left (south) around the south-east arête of Mt. Shaughnessy. A pass at the head of this glacier leads to Mountain Creek Valley.

Ichthyosaurus—Name: From a fancied resemblance to that extinct genus of reptilia.

Altitude: 7,600 feet.

Location: An isolated rock rising at the head of the Asulkan Valley from the snows of the Asulkan Glacier near its northern base, east of the central timbered spur at the head of the valley.

Illecillewaet Glacier—Name: In relation to Illecillewaet River and Névé.

Altitude: 4,800-9,000 ft. It is a coincidence that the crest of the Illecillewaet Névé above the Glacier (8,400 ft.) and that of the Deville Névé (8,300 ft.) 5 miles further south are practically

on the same level and in perfect alignment, although separated by the deeply cut notch of Glacier Circle (5,700 ft.)

Location: South of Mt. Sir Donald and east of the Asulkan Valley, it lies directly along the great eastern escarpment of the Selkirks.

First Ascent: By W. S. Green and the Rev. H. Swanzy in 1888.

Area: About 10 square miles. The névé is a good example of a local ice-cap glacier. It is drained on the north by the Illecillewaet Glacier, and on the south-west by Geikie Glacier, these being the two principal outflows, although the névé also overflows to the Asulkan Valley on the west and to Glacier Circle on the south.

The Illecillewaet Glacier is in easy proximity to Glacier House, a walk of about forty-five minutes. An interesting and beautiful and comprehensive near view of the entire glacier is obtained from a point on the trail leading to Cascade Summer House and Avalanche Crest, just at the corner where the trail turns sharply to ascend the steep mountain-side. The ice-fall from this point shows like a great tongue lying wide-spread on its rock-bed, scored in every direction by a maze of crevasses sweeping outwards from the centre The soft undulating névé above, and the crinkled, corrugated glacier below, confined between parallel rock-ribs, flecked and spotted by layers of snow show through the nearer forest as in a land of magic —which the Selkirks truly are. Glacier Crest is another point from which the ice-fall is seen in minute detail.

From the crest of the névé to the base of the tongue, the fall is 3,600 ft. Seen from the station platform the great ice-walls rise steeply to the skyline, and thousands of people yearly view the wonderful sight from the daily trains stopping at Glacier. But to appreciate fully the magnificence of the spectacle it is necessary to study it; to see it under different aspects, in light, in shadow, with the sun sparkling on its many ice-points, or covered by a soft mantle of fresh snow; to go up among its crevasses, to stand beside its sêracs, to follow its snow-slopes to the sky-line and there gaze upon the dwarfed landscape below. Unless one is an expert mountaineer, it is not safe to go on the glacier or to travel across its névé without a Swiss guide. A day spent in such wandering will well repay those looking for pleasure and healthful exertion. The sêracs themselves are worth the excursion.

Route: From the hotel a good trail leads to the bare moraine below the ice-tongue, through beautiful woods of spruce, cedar, hemlock, with underwoods of huckleberry bushes, alder, white-flowered rhododendrons, devil's club and many a delicate low-growing shrub. Never far from the rushing Illecillewaet torrent, the path lies broad and well-beaten, and no guide is required to the foot of the ice.

Distance: 2 miles.

There are many superb views of surrounding mountains through openings in the forest as the trail proceeds Among the boulders of the terminal moraine are a number of rocks marked with red paint measuring the yearly retreat of the ice-forefront. Close and careful observations of this glacier's movements have been carried on for many years by the Messrs. Vaux and Miss Vaux, of Philadelphia. (See under "Glaciers of the Selkirks").

Illecillewaet River—Name: By Walter Moberly, C.E.; an Indian word, meaning "swift water."

Location: The northerly outflow of the Illecillewaet Glacier. It flows westerly for about 50 miles and empties into the Columbia River 2 miles south of Revelstoke. It is a typical glacial stream fed by numerous torrents conveying the run-off from hundreds of glaciers. The principal tributaries are Loop Brook, Cougar Brook, Caribou Creek, Flat Creek, North Fork (Illecillewaet River) Albert Creek, Silver Creek, Twin Creeks and Greely Creek. The Illecillewaet affords fair fishing in places; and the steelhead or Gairdner's Trout (*Salmo gairdner*) a very gamey fish, provides good sport. Two miles easterly from Revelstoke the river is confined in a box canyon—a narrow gorge with perpendicular rock-walls carved in a series of buttresses by the swirling eddies of the torrent. A wildly picturesque spot.

Illecillewaet Station—Name: By C.P.R. Company, with reference to the Illecillewaet River.

Altitude: 2,710 ft. (rail level).

Location: On the line of the railway, 6½ miles east of Albert Canyon Station and 15 miles west of Glacier. Here was once a busy mining hamlet; but when the boom burst that built it, the little settlement was practically abandoned. Though a few small mines of silver-galena are still in operation, it is little more than a collection of deserted, tumble-down shacks.

Incomappleux River (Fish Creek)—Name: By Kootenay Indians, meaning "Fish River."

Location: Rises in Geikie and Van Horne Glaciers and flows [illegible] and south to the north-east arm of Upper Arrow Lake. (See under Fish Creek.)

Jeopardy Slide—Name: Local name given to a tract swept by Avalanches.

Location: On the west side of the Junction of Slick Creek with Incomappleux River. The mining trail over the Flat Creek Pass follows the valley of Slick Creek, leaving it at Jeopardy Slide to descend to the bed of the Incomappleux River. The Slide is very steep and overgrown with alders and nettles. The trail traverses it in zigzags. It is not in the least dangerous when in good condition.

Jove, Mt.—Name: By the Topographical Survey, with reference to Castor, Pollux, and Leda Peaks.

Altitude: 9,176 feet.

Location: Part of the rock-ridge above the Asulkan Glacier on the south-west; the isolated mass of which the three peaks, Castor, Pollux and Leda form co[illegible]ent parts. It is separated from the Dome by Sapphire Col. P[illegible]., the highest peak, is 9,176 feet.

Kilpatrick, Mt.—Name: By the Topographical Survey, after T. Kilpatrick, a popular local superintendent of the C.P.R. at Revelstoke, who has for many years been in charge of the railway through the Selkirks—a difficult division, owing to the very heavy snowfall.

Altitude: 10,624 feet.

Location: A peak of the Purity Range; adjoins Mt. Wheeler

on the west. It is a hive-shaped mass entirely snow-covered on its north and east faces; the other faces are steep rock.

First Ascent: By Messrs. Holway, Palmer and Butters in 1909.

Route: (1) Reached from Glacier House by the Asulkan Valley and Pass, the Geikie, Dawson and Donkin Glaciers, Donkin Pass; thence, either by Bishop's Glacier and Deville Névé, keeping north of Mt. Wheeler, or by crossing the north end of the Bishop's Range and ascending Black Glacier to its head and working on to the west arête of Mt. Kilpatrick whence the climb is easy.

Time required: For this route, 3 days if the weather holds good. A camp is made on Mitre Creek Valley below Donkin Pass. All the outfit must be carried on the shoulders.

Route: (2) By the Beaver Valley to the Deville Glacier and Névé.

Time required: About 6 days with ponies and a camp outfit which can be taken to a point opposite Glacier Circle.

View: On the summit of Mt. Kilpatrick you are in the midst of the snow-world of the Selkirks; all around are glaciers and wide snowfields. The peak is immediately above the Battle Glaciers and the eye sweeps their full length. The wonderful maze of hanging glacierettes lining the sides of Battle Creek Valley and clinging to the north face of the Purity Range are seen to advantage. It is a magnificent spectacle and well repays the exertion of the expedition. Three miles distant, Mt. Purity rises, a splendid isolated cone of snow.

Leda Peak—Name: By the Topographical Survey, with reference to Castor and Pollux.

Altitude: 9,133 feet.

Location: The south peak of Mt. Jove; rises directly above the Asulkan Névé on the west side.

Route: Reached from Glacier most readily from the Asulkan Pass, whence it is an easy ascent of rock and snow. A return can be made by the Asulkan Glacier direct; or by traversing the Swanzy Glacier, Lily Col, and home via the north slopes of Mt. Afton and the Abbott Ridge.

Time required: 4 or 5 hours. One guide is necessary.

View: Excellent views of the Dawson Range, Mt. McBean and the Incomappleux Valley; northwards, of Asulkan Valley, Sir Donald and Hermit Ranges; westward, Mt. Bonney and the Swanzy and Clarke Glaciers are close at hand.

Lily Glacier and Névé—Name: Some have thought that this so delicate appellation for a river of "thick-ribbed ice" came from the avalanche lilies (dogtooth violets) which follow the edges of the glaciers. And it is a pretty conceit. But the name was given by W. S. Green in honour of a daughter of the Rev. H. Swanzy, his fellow-explorer "among the Selkirk Glaciers."

Altitude: 5,500—8,200 feet

Location: Between Mt. Swanzy on the west, and The Dome, The Rampart and Mt. Afton on the east. One of the chief sources of Loop Brook and a very interesting glacier.

Route: Reached from Glacier via Mt. Abbott, the north slopes of Mt. Afton and a traverse along the slopes of the Rampart. Unless skilled in mountaineering, a guide is necessary.

A well-known Alpine Climber, Val. A. Fynn

F. W. Freeborn on a Snow-cap (11,636 ft.)

Time required: 5 hours. The expedition can be extended to Sapphire Col immediately south of The Dome, and a return made by the Asulkan Glacier and Valley, providing an expedition of great variety and interest.

Lily Col—Name: By W. S. Green, with reference to Lily Glacier.

Altitude: 8,228 feet.

Location: The snow col between Lily and Swanzy Glaciers. Very fine views in both directions.

First Ascent: By W. S. Green and the Rev. H. Swanzy in 1888.

Lookout, Mt.—Name: Origin not known. A good lookout-point over the Illecillewaet and Asulkan Glaciers and Valleys.

Altitude: 8,219 feet.

Location: A peak of the Asulkan Ridge, opposite and directly above the commencement of the ice-fall of the Illecillewaet Glacier; adjoins Glacier Crest on the south.

Route: Reached from Glacier House by trail to Illecillewaet Glacier and an ascent of the same along its west margin; thence a short rock-climb to the summit. A guide is necessary.

View: This is an excellent view-point for the Sir Donald and Hermit Ranges, the basin of Rogers Pass, the Asulkan Valley, Glacier, and Névé, and the Abbott Ridge.

Loop, The—Name: With reference to the great curves described by the railway along the lower slopes of Mt. Abbott on the south, and of Mt. Cheops on the north, in order to overcome the very steep descent from Rogers Pass to the bed of the Illecillewaet River. The Loop is a lasting tribute to the genius and skill of Major Rogers, the chief engineer of construction. The distance being too short and the grade too steep to contrive an adjustment of the railway in a direct route between the summit of the pass and the bed of the Illecillewaet, the track along the base of Mt. Abbott was extended on very high trestles, in a good pear-shaped curve, up the valley of Loop Brook crossing and recrossing the stream, doubling back on Mt. Abbott and passing 125 feet below its first traverse; thence it was made to describe another wide curve, for the third time crossing Loop Brook, now close to its junction with the Illecillewaet River. The original trestle-bridges are now filled in, and the creaking timbers are buried beneath a mass of rock and earth, making a safe, permanent way.

Loop Brook—Name: By W. S. Green, with reference to the great double loop described above.

Location: Drains the Lily, Bonney and Green Glaciers, and joins the Illecillewaet River at the Loop.

Laurie Station and Mining Camp—Name: By Canadian Pacific Railway Company, origin unknown.

Altitude: 2,961 feet (rail level).

Location: An abandoned mining camp 2¾ miles east of Illecillewaet Station, 12¾ miles west of Glacier Station. Immediately west of Laurie there is half a mile of tunnels and snowsheds, and a watchman is stationed here to guard against accidents from the falling rocks and other possible casualties; otherwise there is no use for a station. The mining camp was prettily situated in a little grassy flat on the opposite side of the Illecillewaet River. It con-

sisted of a hotel, an office and manager's residence and a number of miner's cottages. The river was crossed by a bridge, and near the track was a concentrator equipped with the latest machinery. Perched high on the perpendicular face of the cliff is the bunk-house near the mouth of the main shaft. From this point the ore was carried in iron buckets along a steel wire cable to the concentrator 3,000 feet below. The cable was suspended over a deep, rocky gulch to an open woodwork tower erected on a projecting spur, midway between the bunk-house and the concentrator, to which it descended sheer. It was customary for the miners to ascend and descend in the buckets, a daily trip requiring much nerve. The ore is a rich galena but was never found in sufficient quantities to pay, and the concentrator and machinery have been sold and removed. The old buildings are rotting away and the bunk-house is now only inhabited by a myriad of mountain rats (Bush-tailed rat; the pack-rat; *Neotoma cinerea*).

Macdonald, Mt.—Name: By order in Council, after the late Right Honorable Sir John A. Macdonald, a Canadian statesman, one of the fathers of the Dominion Confederation, and for many years Prime Minister. As such, he had much to do with the successful completion of the Canadian Pacific Railway, and in commemoration of this association and that of his confrère, the Hon. Sir Charles Tupper, the two portal-peaks standing guard over the gateway of Rogers Pass were named respectively Mt. Macdonald and Mt. Tupper.

Altitude: 9,428 feet.

Location: Most northerly peak of the Sir Donald Range; forms south wall of Rogers Pass. Climb: rock.

First Ascent: Names unknown.

Second Ascent: The late Rev. J. C. Herdman, D.D., with guide Edouard Feuz, Sr., in 1903. Dr. Herdman and his guide made the ascent under the impression that it was a virgin peak. Having congratulated each other on their good fortune they were about to commence the descent. Immediately beside the Doctor was a great block of rock with a hol[illegible] surface filled with water. Casually he bared his arm and [illegible]nto the hole when, to his amazement and dismay, he [illegible]orth a rusty nail!

Route: Reached f[illegible] House by an ascent of the great couloir 1¾ miles east o[illegible]rs Pass Station.

Time required: 7 hours. One guide is necessary.

View: A firstrate view of the entire region. This peak has been seldom climbed, but is one that will best repay the mountaineer.

Macoun, Mt.—Name: By W. S. Green, after Prof. John Macoun, Dominion Naturalist and Botanist.

Altitude: 9,988 feet.

Location: At the south-east corner of the Illecillewaet Névé, overlooking the Beaver River Valley, the northerly peak confining Glacier Circle.

First Ascent: By the late Rev. J. C. Herdman, D.D., with guide Edouard Feuz in 1902.

Route: Reached from Glacier via the trail to Illecillewaet Glacier, ascent of the rocks on the right side of the ice-fall to Perley Rock, and a traverse of the Illecillewaet Névé to the base of the

peak. Ascend the face at the north end and traverse the ridge to its summit.

Climb: snow, rock and ice.

Time required: 7 hours. Of the climb Dr. Herdman writes: "Next came a difficulty which I have never seen before or since in any mountain range: a crack, three to six feet wide, separated the shoulder we were on from the main mass and the walls looked perpendicular. This sharp cut into the mountain may have been limited but where we stood, because of the rough boulders, there was no way of getting past and I imagined for some moments that our climb was completely blocked." (See Canadian Alpine Journal vol. I, No. 1, p. 105.)

View: As a view-point Macoun is of great interest. It commands the entire Illecillewaet and Deville Névés; sweeps the Beaver Valley up and down, overlooks Bald Mountain and the Dogtooth and Spillimacheen Mountains and peeps into Glacier Circle. It is specially recommended as an expedition. But one must start early on account of the long tramp across the Illecillewaet Névé.

Marion Lake—Name: By W. S. Green, after his daughter.

Altitude: 5,666 feet.

Location: On the north face of Mt. Abbott above Glacier House.

Route: Reached by a good pony-trail starting directly behind the hotel.

Time required: 1 hour. Along the trail are some very fine views through vistas of forest. The lake is a sad-coloured little tarn of about five acres area, nestling in a rocky basin. At the southern margin is a rock slide, where a big slice has been detached from the flank of Mt. Abbott and has come crashing down to the lake's basin. From this point a charming alpine landscape greets the eyes. Across its placid surface, and growing out of the bright emerald marsh grass, rises a fringe of straight and shapely dark-hued spruce, between whose high interspaces show the snowy mountains of the range opposite. Its charm is enhanced a hundred fold when the whole picture is repeated in miniature in the lake.

McBean, Mt.—Name: By Topographical Survey; origin unknown.

Altitude: 9,501 feet.

Location: Between Van Horne Brook and Incomappleux River.

Route: (1) Reached from Glacier via Asulkan Trail and Pass, Geikie Glacier and Creek, and Van Horne Brook. All camp-outfit must be carried. For novices one guide is necessary.

Time required: 3 days, camping for 2 nights in the valley of Van Horne Brook.

Route: (2) May also be reached via Flat Creek and Pass, Jeopardy Slide, and Incomappleux River. Ponies can be used by this route to carry the camp-outfit to the base of the mountain.

Time required: 5 days. A guide is necessary.

Climb: chiefly rock. The mountain is a very prominent one seen from the Asulkan Pass south of the great bend of the Incomappleux River. There are two important peaks: Findhorn, 9,501 feet and Tomatin Peak, 9,445 feet. On the east slopes are the Van Horne Glacier and Névé, and a large unnamed snowfield draining westward.

View: The views from either peak are very extensive and cover a wide territory of snow and ice. Across the Incomappleux River are numerous large snowfields and unnamed impressive snow-clad peaks. No record exists of any ascent of either peak. (1911). (See also under Findhorn.)

McGill Peak—Name: By Dr. J. W. A. Hickson, after McGill University.

Altitude: 8,776 feet.

Location: The most south-westerly peak of the Hermit Range, in the northern corner between the Illecillewaet River and Caribou Creek, and adjoining Mt. Bagheera on the west.

First Ascent: By J. W. A. Hickson with guide Edouard Feuz, Jr.

Route: (1) Reached from Glacier via Loop trail, Cougar Brook trail and the pass at the head of Cougar Brook, above which it rises.

Climb: snow and rock. For novices one guide is necessary.

Route: (2) Can also be reached by following the railway for 10½ miles to Caribou Creek and ascending the shoulder at its mouth on the north-east side. The Cougar Brook route is the best, spending the night at the Caves.

Time required: From Glacier to the Caves 3 hours; from the Caves to summit of the peak, 4 hours. Excellent views.

McNicoll, Mt.—Name: After a Vice-President of the Canadian Pacific Railway Company.

Altitude: 8,745 feet.

Location: Immediately west of Beaver River between Mountain and Alder Creeks.

Route: Follow Mountain Creek for 3 miles from the railway where the ascent begins.

Climb: rock, after pushing through much fallen timber and brush.

View: Good views of the valleys of Mountain and Alder Creeks and of Beaver Valley.

Meeting of the Waters—Name: With reference to the junction of Illecillewaet River and Asulkan Brook.

Location: The point where the two streams meet about 200 yards from Glacier House.

Route: Reached from Glacier by following the trail to the Illecillewaet Glacier for about 75 yards to two seats in full view of the junction of the two streams. It is an attractive spot, especially at high water when the two turbulent glacial torrents come together furiously and scatter their crystal sprays. A rock juts into the main stream just below the confluence, where there is a good near view of the peak of Sir Donald with the two streams in the foreground.

Michel Peak—Name: By the Topographical Survey, after Friedrich Michel, a Swiss guide at Glacier.

Altitude: 10,034 feet.

Location: The western and lowest peak of Mt. Dawson; adjoins Donkin Pass on the east.

First Ascent: By Edouard Franzelin in 1908. Ascended most easily from Donkin Pass. (For full route see Mt. Dawson.)

Mitre Creek—Name: By the Topographical Survey, in relation to Bishop's Glacier.

Location: Flowing from Bishop's Glacier between Mt. Donkin and the northern extremities of the Bishop's and Purity Ranges; joins Van Horne Brook about ¾ mile from its junction with Goikie Creek. About ½ mile from the snout of the glacier is a picturesque fall of some 50 feet, where the creek tumbles over a series of ledges. It is close to this cataract that parties climbing on the Bishop's and Purity Ranges and on mountains in that vicinity usually camp. Mitre Creek is well worth a visit for itself. (See route to Mt. Purity.)

Mountain Creek—Name: Local name, origin unknown.

Location: A large stream with many tributaries, joining Beaver River about halfway between Beavermouth and Bear Creek Stations on the railway; forms the north-west boundary of the Hermit Range. The source of the flow is in close proximity to the sources of the North Fork of the Illecillewaet River and of Downie Creek. Two large tributaries have their sources immediately north-east of Caribou Creek, and are separated from its valley by a narrow water-shed. Nearly all the summits of the Hermit Range command good views of these valleys and their streams. They are deeply trenched and covered with burnt timber. Several large meadows lie along the main stream. Northward beyond the parent stream, are several fine snow-clad and rock peaks: Mt. Iconoclast, 10,520 feet, Mt. Sorcerer, 11,000 feet, and others. There is no known trail up Mountain Creek or its tributaries. Or, if there be, it is unfit for travel (1911).

The railway bridge across Mountain Creek is of interest. It is a fine steel trestle or viaduct, consisting of 100 feet lattice trusses on steel towers, with 40 feet plate girders over the tops of the towers. Owing to the solid character of the hydraulic fill, the masonry-pedestals are built directly on the dump without resort to piles or artificial foundation of any kind. This modern bridge replaced a trestle structure with a Howe truss over the Creek, which was one of the largest wooden structures in the world.

Nakimu Caves—(See Caves of Cheops.)

Napoleon—Name: With reference to a prominent gendarme resembling the "Little Corporal."

Altitude: 7,737 feet.

Location: The south-east spur of Mt. Cheops. At the north end of the spur is a detached rock which, from the summit of Rogers Pass shows a striking resemblance to profiles of Napoleon.

Route: Reached from the Rogers Pass summit by a straight ascent through bush and brush and up easy rock-ledges. A guide is scarcely necessary.

Time required: 3 hours.

View: From its crest the views of the Rogers Pass Basin are very fine; and especially of the Sir Donald Range, the Illecillewaet Glacier, Mt. Bonney and Loop Brook Amphitheatre, and down the Illecillewaet Valley. (See panorama accompanying Vol. II. "Selkirk Range.") It is easy to reach the summit of Mt. Cheops from the Napoleon spur.

North Fork Illecillewaet River—Name: By Walter Moberly.

Location: A tributary from the north joining the river close

On the Asulkan Trail

Mt. Cheops and Napoleon (The Little Corporal)

to Albert Canyon Village. It flows in a deep, heavily-timbered valley with precipitous sides. A pass at the head leads to Downie Creek. A waggon-road from Albert Canyon Village crosses the river by a bridge and leads up the valley to its head. Some years ago a lot of mining machinery was taken over it to the Waverly Mine situated on Downie Creek. A large amount of money was spent at this time and on the road, but the machinery has since been taken out and the mine abandoned.

Observation Point—Name: By the C.P.R. Company with reference to the views.

Altitude: 5,750 feet.

Location: A point on the north face of Mt. Abbott, near Marion Lake. At the lake a trail branches leading in a few minutes to the place, about 100 yards off.

View: A glorious view down the Illecillewaet Valley shows the railway at the Loop and miles of winding, shining river; also Mt. Bagheera and Catamount Peak at the head of Cougar Brook. Turning to the north-east the Hermit and Sir Donald Ranges are seen in detail. Below, as on a map, lies Rogers Pass with its long lines of snowsheds protecting the railway at the base of Mt. Avalanche. Person's unable to climb ought to make this excursion for the sake of the views.

Oliver's Peak (Mt. Oliver)—Name: By the Topographical Survey after E. Oliver Wheeler.

Altitude: 8,379 feet.

Location: North of the Incomappleux River and immediately east of Flat Creek Pass. It is easily ascended from Flat Creek Pass in 2 hours.

View: Its summit gives excellent views of Incomappleux River both up and down; and also commands the great south névé of Mt. Bonney. Also there is a very interesting and instructive view of the Dawson, Bishop's and Purity Ranges, showing at full length the glaciers between them, and the confluent glaciers that f from the peaks of the Purity Range.

Overlook, The—Name: By Prof. C. E. Fay, with reference to its position in relation to the Illecillewaet Glacier.

Altitude: 7,950 feet.

Location: A rock overlooking the Illecillewaet Glacier; extends southerly between Uto and Eagle Peaks. From it the glacier is seen in minute detail, crevasses, sêracs and moraines, though somewhat dwarfed by the height above them.

Route: The Overlook is reached from Glacier House by ascending the east side of the trough of the first watercourse beyond the Cascade, from the Sir Donald trail. It is an arduous ascent but not technically difficult.

Time required: 3 or 4 hours. Except for novices a guide is not necessary.

Pearce Mt.—Name: By the Topographical Survey, after William Pearce, for many years connected with the Topographical surveys of Canada.

Altitude: 9,419 feet.

Location: On the west side of the Beaver River Valley, between Alder and Six Mile Creeks.

Route: Reached by travelling some 5 miles up Alder Creek to the base of the mountain. There is no known trail up Alder Creek and the route would be arduous owing to thick brush and fallen timber. The views would probably be worth while.

Perley Rock—Name: By W. S. Green after H. A. Perley, the proprietor of Glacier House at the time of Mr. Green's expedition in the Selkirks.

Altitude: 7,873 feet.

Location: A prominent rock rising at the upper eastern edge of the ice-fall of the Illecillewaet Glacier.

First Ascent: By W. S. Green and the Rev. H. Swanzy in 1888. Perley Rock is separated from the mountain side by a tongue of glacier and may be termed a *nunatak*. There is a fairly level plateau on the top where Messrs. Green and Swanzy placed a camp at the time of their first ascent to the Illecillewaet Névé.

Route: Reached from Glacier House by trail to Illecillewaet Glacier and ascent of rocks on the east side of the ice-fall.

Time required: 3 hours. Novices require a guide.

Pollux Peak—Name: By Messrs. Abbott, Fay and Thompson, with reference to Castor and Pollux of heathen mythology.

Altitude: 9,176 feet.

Location: The central and highest peak of Mt. Jove; on the west side of the Asulkan Glacier.

First Ascent: By Messrs. Dixon, Michael, Fay, Noyes and Van Derlip with guide Peter Sarbach.

Route: Reached from Glacier most readily from the Asulkan Pass, from which it is an easy ascent of rock and snow. (For route, time and views, see under Castor and Leda.) A fine view of the symmetrical snow-clad Mt. Purity may be obtained from its summit.

Time required: The summit of Pollux can be reached within the hour by following the arête from either Castor or Leda.

Prairie Hills—Name: Local name with reference to their grass-covered summits.

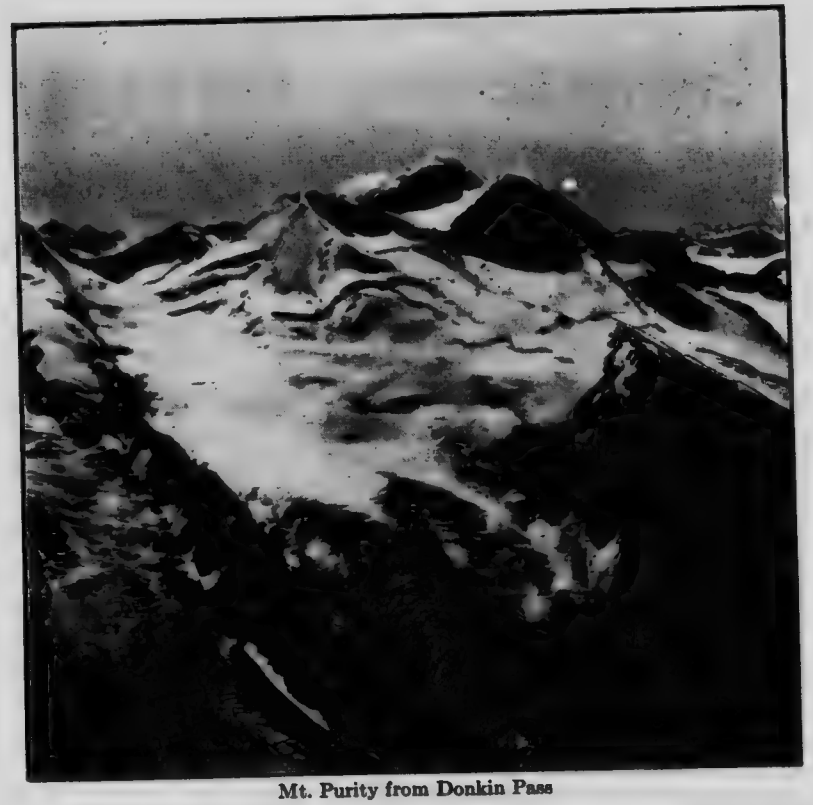
Altitude: A low range of hills, about 8,000 feet.

Location: They rise along the east side of the Beaver River Valley, north of Grizzly Creek. On the Beaver Valley side they have for the most part been swept by fire and are now covered with fallen timber. Eastward they gradually merge into the greater elevation of the Dogtooth Range.

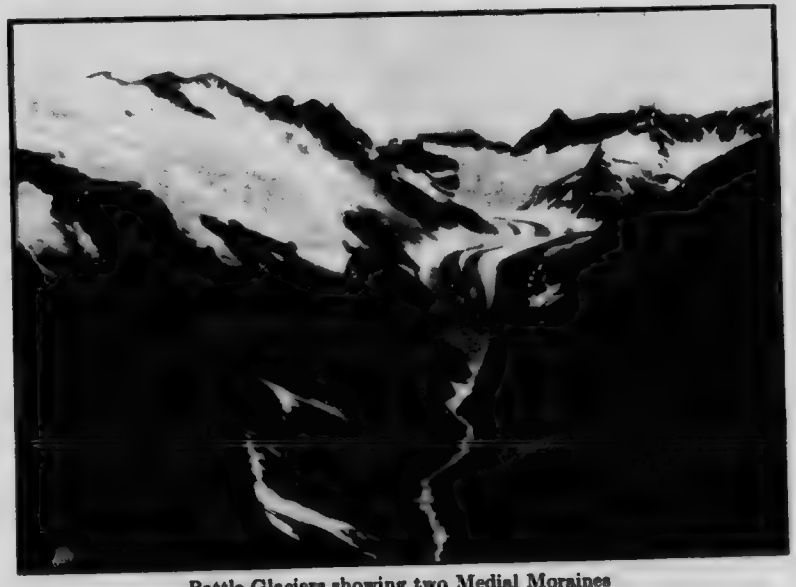
Purity Range—Name: By Topographical Survey, with reference to Mt. Purity.

Altitude: Highest peak, Mt. Wheeler, 11,023 feet.

Location: Extending east from Mt. Purity to Mt. Wheeler and south to Grand Mt. There are five peaks in the Range: Purity, 10,457 feet; an unnamed peak, 10,000 feet; Kilpatrick, 10,624 feet; Wheeler, 11,023 feet; Grand Mt., 10,832 feet. It is the most picturesquely arctic range of the Selkirks, owing to the wild confusion of crevassed and broken ice-falls that radiate from it in every direction, and the great masses of snow lying along its crests. Twenty-five glaciers, including some of rare interest and beauty, have their sources along this range. (For routes, times, views, etc., see under Mt. Purity, Mt. Kilpatrick, Mt. Wheeler and Grand Mt.).



Mt. Purity from Donkin Pass



Battle Glaciers showing two Medial Moraines

Purity Mountain—Name: By H. W. Topham who saw it from the Donkin Pass, a pure white cone shrouded in snow from base to summit.

Altitude: 10,457 feet.

Location: Most westerly peak of the Purity Range, situated between the headwaters of Van Horne Brook and Battle Creek.

First Ascent: By Messrs. Huber, Topham and Forster in 1890.

Route: Reached from Glacier House via the Asulkan trail and Pass, Geikie Glacier, Dawson Moraine, Donkin Glacier and Pass to a camp on Mitre Creek a short distance below Bishop's Glacier. The route from this rendezvous: cross the end of Bishop's Range to the stream from Black Glacier; then ascend to the most westerly glacier from Mt. Purity, follow its edge and ascend the steep snow slopes to the summit.

Time required: From camp and return, a full day; from Glacier House, 3 days with 2 nights on Mitre Creek. The climb is chiefly ice and snow. Unless experienced in climbing, a guide is necessary.

View: Mt. Purity is a prominent and very attractive peak, isolated, pure white and shapely, rising out of snow fields as white. It is the pivotal peak of the vicinity and is surrounded on all sides by névés, no less than six glaciers radiating from it, the principal being Van Horne, Purity and the western Battle Glacier. Owing to its isolated position, the views are many and varied and magnificent, including such prospects as the amphitheatre of the Battle Glaciers, the Van Horne Névé and Glacier, Mt. McBean; and, across the Bishop's Range, the snowy heights of Mt. Bonney and the many glaciers flowing from its southern face. On every side there is a wilderness of snow and ice above the rich green forests of the valleys.

Purity Glacier and Pass—Name: In relation to Mt. Purity.

Altitude: 6,800—9,200 feet at summit of the Pass.

Location: The glacier lies north and the pass north-east of the peak.

Route: The ascent is made from the valley of the stream flowing from Black Glacier by the moraine of the glacier lying east of the great north-west shoulder of the mountain. The pass is of snow and leads to the head of the western Battle Glacier.

Time required: 4 hours from a camp on Mitre Creek to the summit of the pass.

Rampart, The—Name: By Messrs. Abbott, Fay and Thompson with reference to its great rock-escarpment, rising sheer above the Asulkan Valley.

Altitude: 8,476 feet.

Location: It constitutes part of the western wall of the Asulkan Valley between Mt. Afton and the Dome.

First Ascent: By Messrs. Abbott, Fay and Thompson in 1895.

Route: Reached from Glacier House by Mt. Abbott trail, the Abbott Ridge, and a traverse along the north and west slopes of Mt. Afton, rising gradually to the summit of the peak.

Time required: 4 hours. Novices require a guide.

View: From the snow col between the highest point of Mt. Abbott and Mt. Afton there is a fine view of the Rampart. Prof. Fay says of it: "From where we sat, the black unassailable precipices of that portion of the ridge resembled in form and shape

the face of a gigantic breastwork, a mighty rampart over whose top towered the tent-like summit of Mt. Swanzy."

Rogers Hut—Name: In relation to Mt. Rogers.

Altitude: Near timber-line on the slopes below Rogers Glacier. The hut was built by the C.P.R. Company for the accommodation of persons making the ascents of Mt. Rogers, Hermit, Tupper and Sifton. By sleeping here an early start is possible and insures good going on the snows of Swiss Névé and Rogers Glacier. It is a mere shack primitive in the extreme, out of repair and very uncomfortable; the roof leaks and mountain rats (pack rat, bush-tailed rat) are very much in evidence. On fine nights, the climber is more comfortable outside.

Route: The hut is reached by a trail along the north side of Bear Creek. It is customary, however, to follow up the bed of the railway. A mile easterly from the station, the path begins to ascend and zigzags up the mountain side. Although very steep in places, ponies may be taken up.

View: The hut is set on a prominent place commanding a splendid view of the pass beneath and of the upper valley of the Illecillewaet; also, of the Sir Donald Range and Glacier, Mt. Bonney and the Bonny Amphitheatre. On the alps between timber-line and the glacier, alpine flowers follow each other in gay profusion according to their season. It is of such high, remote and rugged gardens—gardens of wild grandeur, that Victor Hugo was thinking when he said: "These huge old gloomy mountains are marvellous growers of delicate flowers; they avail themselves of the dawn and the dew better than all your meadows and hillocks can do it."

Rogers Mt.—Name: By Carl Sulzer, after Major Rogers, the discoverer of Rogers Pass.

Altitude: 10,536 feet.

Location: The highest massif of the Hermit Range, situated directly north of Rogers Pass summit, and consists of the following peaks, enumerated from west to east: Rogers Peak, 10,536 feet; Grant Peak, 10,216 feet; Fleming Peak, 10,370 feet; Swiss Peak, 10,515 feet, and Truda Peaks, 10,216 feet. Mt. Rogers is a fine snow-and-rock mass of much serrated appearance. Seven glaciers radiate from it like the spokes of a wheel. It dominates Rogers Pass on the north side and is in full view from Glacier House, 8 miles away, where its glaciers and snowfields show picturesquely above the steep basal slopes covered by dark green forest.

Rogers Glacier—Name: In relation to Mt. Rogers, whence it flows.

Altitude: 7,200—8,800 feet.

Location: Immediately west of and below Rogers Peak; and occupies a central position in an amphitheatre of which Mts. Tupper and Grizzly are the outlying peaks, and Mts. Sifton, Rogers and Hermit the intermediate ones. There are three fairly good-sized glaciers and a small one tributary to the basin. It is evident that at one time they were united and filled the whole of it, flowing over the crest and down the slopes to the bed of Bear Creek. The old moraines at a considerable distance from the present forefeet of the glaciers and the rounded, ice-worn condition of the rocks furnish ample proof. The amphitheatre is of extreme interest owing

to the abundant traces of glacial action that have been left The floor is ribbed by rock-ridges with deep grooves between them, scooped out by the ice of prehistoric glaciers. The sides of the grooves scored and polished in the direction of the flow, are very marked examples of glacial striation.

Route: Reached from Rogers hut over the alps in half an hour. Novices travelling on it require a guide.

Rogers Pass—Name: After Major Rogers, the discoverer.

Altitude of summit: 4,351 feet (rail level).

Location: Between Mts. Macdonald and Avalanche on the south and east, and Mts. Tupper and Cheops on the north and west, and traversed by the Canadian Pacific Railway.

First Ascent: By Major Rogers and party in 1881. The pass properly speaking, extends from the junction of Bear Creek and Beaver River to the Loop. For the largest part of this distance the railway line is protected by snow-sheds against avalanches. There are some 6 miles of snow-sheds on about 10 miles of track. East of the summit of the pass the gorge is narrow and the mountains tower a full mile on either side; west of it the valley broadens, but this is the most dangerous part owing to the many avalanches that sweep down the steep west slopes of Mt. Avalanche. A pony trail traverses the pass from Glacier House to Rogers Pass Station, and from the station to near the old tank, where it turns sharply and ascends to Rogers hut. The trail makes a delightful ride or walk, lying partly through beautiful forest and partly in the open. The views on all sides are superb. (For narrative of the discovery of the pass, see Historical Sketch.)

Rogers Pass Station—Name: By C.P.R. Company in relation to Rogers Pass.

Altitude: 4,300 feet (rail level).

Location: Half a mile east of Rogers Pass summit and 4 miles from Glacier House. There is a small railway village here, comprising besides the station a store, a small hotel, the houses of a few railway employees, and a "round house," where the heavy engines—the pushers—used to shove the trains up the steep grades to the summit are kept. At one time Rogers Pass Station was situated a mile further east, where the old tank now stands, but an avalanche came down the steep slopes of Mt. Tupper and swept it out of existence. When rebuilt it was placed at its present site, out of danger.

Rogers Peak—Name: In relation to Mt. Rogers of which it is the highest peak.

Altitude: 10,536 feet.

Location: Most westerly peak of Mt. Rogers.

First Ascent: By Messrs. Abbott, Thompson, and Little in 1896.

First Ascent by a lady: Gertrude E. Benham in 1904.

Route: Reached from Glacier House by trail from Rogers Pass Station to Rogers hut near timber-line on the slope below Rogers Glacier. The ascent from the hut is via Rogers Glacier and the south-east arête of the peak.

Climb: ice, rock and snow.

Time required: From the hut 5 hours; from Glacier 8 hours. It is usual and better to spend the night at the hut in order to get

Swiss Guides in A. C. C. Camp

Climbing from Rogers Pass Camp

an early start and so secure good travelling on the snow. For those unskilled in mountain climbing a guide is necessary.

View: From the summit the views are wonderful. In every direction there meets you an ocean of rock and snow; an endless maze of valleys with glittering streams winding through. Immediately below is Rogers Pass, its southern slopes green in forest and meadow, and with its mark of humanity in Rogers Station and Village, that mark which is a part of Swiss mountain landscape, but almost never of the Selkirks. Nearby rises Sir Donald's sharp grey peak; and yonder is the Illecillewaet Glacier and the green Asulkan Valley leading to its own white Glacier; and farther yet the Dawson Range uplifts its splendid, snowy mountains. To the south, Mt. Bonney and its glaciers are clear in a bird's-eye view; west are the nearer crests of the Hermit Range; and north, the wooded valleys of Mountain Creek and its tributaries, and beyond them in clear summer weather, appear the great masses of Mts. Sorcerer and Iconoclast, and the snowy heights of Mt. Sir Sandford beckoning and challenging for conquest. Eastward, the Beaver Valley glances; and far off in a chaos of peaks the knowing climber hails Mts. Columbia, Bryce, Lyall, and Forbes, giants of the Rockies. In describing the sights seen from high altitudes, a vocabulary is wanting. The familiar words convey so little to those who have never gazed in wonder upon the splendours of immense and multiform mountain scenes reaching to the eye's utmost ken including forest and stream, valley and ravine, passes and peaks, glaciers and snowfields. It is because Mt. Rogers commands such superb sights of valleys that the whole immensity of view is so grandly varied.

To all beginners in the sublime and noble sport of mountaineering, the climb of Mt. Rogers is recommended. Of the first ascent Professor Little writes: "Three hours of such clambering brought us to the summit.....The sense of fatigue disappeared with the sight that greeted us. We had crossed the rock-rib that joins Rogers Peak to Swiss Peak and justifies Herr Sulzer's use of Mt. Rogers as an inclusive term, and were now standing on the snow that covers the crest of the mountain like a thick fold of flesh. Mr. Abbott called me to its northern edge, saying: 'Look down and see what I have never seen before in Europe and America.' The sight was a fall of snow at least fifteen hundred feet in height that seemed perpendicular, as we cautiously peered over. From its base a glacier swept away over an ice-fall, marked by huge irregular séracs, into the valley beyond. To us, toiling for hours over blackened rocks, this sudden transformation of the peak into pure untrodden snow, rising from a foundation of glistening ice, was as startling as it was beautiful." (See Wheeler's "Selkirk Range" page 308-310.)

Ross Peak—Name: After James Ross, in charge of railway construction for the C.P.R. Company.

Altitude: 7,718 feet.

Location: On the west side of Loop Brook at its junction with the Illecillewaet River, 3 miles from Glacier House as the crow flies.

First Ascent: By Messrs. C. S. Thompson and G. T. Little in 1896. It is a low peak showing some very interesting views, particularly of the Bonney Amphitheatre at close range. From it you look across the Illecillewaet River directly up the Cougar Brook

Valley, and can see Goat Falls close by the Caves of Cheops, the falls which drop into a hole in the ground and join the subterranean flow of Cougar Creek. Ross Peak gives too an excellent view of Rogers Pass as far as the village, and of the Loop which is immediately below.

Route: Reached from Glacier House by following the railway track to the end of the Loop and then ascending. Climb: rock.

Time required: 6 hours. Novices require a guide. The two central peaks of the ridge between Ross Peak and Mt. Green are, as far as known, still unclimbed.

Ross Peak Station—Name: By C.P.R. Company, in relation to Ross Peak.

Altitude: 4,300 feet (rail level).

Location: A siding on the railway, 6 miles west of Glacier House and between Cougar Mt. and Mt. Green.

Sandwich Islands—Name: From their use as a stopping place for luncheon, when ascending the Illecillewaet Glacier on the Sir Donald side.

Location: Rocks rising from the Glacier immediately west of Perley Rock.

Sapphire Col—Name: By Prof. C. E. Fay.

Altitude: 8,488 feet.

Location: The snow pass between Castor and The Dome. Exactly at the crest of the col is a pool of water, clear as crystal, lying in a hollow of the snow. From the summit of Castor it shows in the sunlight a deep transparent blue and sparkles like a sapphire on a bed of soft white velvet.

First Ascent: By Messrs. Abbott, Fay and Thompson, in 1895.

Route: Reached from Glacier by the pony trail to Mt. Abbott, starting directly behind the hotel; then via Mt. Abbott Ridge, the north side of Mt. Afton and a traverse of the west slopes of the Rampart and The Dome to the crest of the pass.

Time required: 5 hours. A return may be made by descending the Asulkan Glacier and taking the Asulkan trail, requiring 4 hours: for complete expedition, 9 hours. Either route may be taken to reach the col. It is an expedition providing a variety of mountaineering work with splendid views, and ought to become a popular one. Unless skilled climbers, a guide is necessary.

Selwyn Mt.—Name: First named Mt. Déville by W. S. Green after Dr. E. Déville, Surveyor General of Dominion Lands. As a mountain in the Van Horne Range has also been called Mt. Déville, the name was changed to Selwyn, after the late Dr. Selwyn, Director of the Geological Survey of Canada.

Altitude: 11,013 feet.

Location: The most easterly peak of the Dawson Range, rising directly above Déville Glacier.

First Ascent: By Messrs. Topham and Forster in 1890.

First Ascent by a lady: Gertrude E. Benham in 1904.

Route: Reached from Glacier House via Asulkan Pass, Geikie Glacier, the right moraine of Dawson Glacier, and the east head-wall of the Dawson Amphitheatre. On reaching the crest of the head-wall of the Dawson Amphitheatre, the snow-ridge to the south is ascended to the summit of the shale-topped elevation midway between

Selwyn and Hasler Peak of Mt. Dawson; thence, a descent across a short, sharp snow arête where the rope should be used, leads to the foot of the peak of Selwyn at its south-west base; finally a scramble up the southern slopes will bring the climber with little difficulty to the summit.

Time required: Two days, with camp one night at the foot of the moraine. The second day will be a long hard one. It can be done more comfortably in three days, with two nights out. The camp outfit must be carried on the shoulders. For inexperienced climbers one guide is necessary.

View: Southward there is a fine view of the Déville Névés full length and of the snow peaks along its western side, and, close at hand, of the Bishop's Range and Glacier; eastward, the summit commands the country beyond Beaver River; north-westward, the snowfields and glaciers surrounding Mt. Bonney.

Sifton Mt.—Name: By the Topographical Survey, after the Hon. Clifford Sifton, at the time when he was Minister of the Interior.

Altitude: 9,643 feet.

Location: A peak of the Hermit Range between Mts. Rogers and Grizzly, situated at the western extremity of the Rogers Amphitheatre.

First Ascent by a Lady: Gertrude E. Benham in 1904.

Route: From Rogers hut ascend the alps and cross the glacier. From the ice, the route lies up the long arête which leads straight to the summit.

Time required: From the hut, 4 hours; from Glacier House, 7 hours; but it is more convenient to spend the night at the hut or on the mountain side in order to get an early start and good travelling on the snow.

View: Views of the Rogers Pass Basin, the Asulkan Basin, and the Sir Donald Range are very fine; westward, the upper parts of the Valleys of Bear Creek and Cougar Brook are clearly seen; and northward, the valleys of Mountain Creek and its tributaries and the Sir Sandford series of mountains lying beyond.

Sir Donald—Name: By order in Council, after Sir Donald A. Smith, now Lord Strathcona and Mount Royal, for years Canada's High Commissioner to England. Originally named Syndicate Peak by Major Rogers.

Altitude: 10,808 feet.

Location: Highest and most southerly peak of the Sir Donald Range; 2½ miles directly east of Glacier House.

First Ascent by south-west face and south-east arête: By Messrs. Huber and Sulzer of the Swiss Alpine Club, in 1890.

First ascent by southwest and southeast arêtes: By F. Leprince Ringuet and H. Cordes, with guides Christian Hasler and Edouard Feuz, Sr., in 1899.

First Ascent by a lady: Evelyn Berens and her husband, with guides Karl Schlunegger and Charles Clarke, in 1901, by south-west face and south-east arête.

First Ascent by north-west arête: By E. Tewes, with guides Edouard Feuz., Sr., and Christian Bohren, in 1903.

Routes: There are three distinct routes to the top of this mountain, the most interesing and difficult peak contiguous to Glacier

House. (1) Take the trail to the Illecillewaet Glacier and turn up the branch trail near the terminal moraine leading along the torrent from Vaux Glacier to the foot of the left lateral moraine; follow this moraine and glacier to the foot of the south-west wall which ascend to the south-east arête that leads to the summit.

Time required: 7 hours.

(2) Instead of taking the branch trail, continue to the foot of the Illecillewaet Glacier; ascend the right lateral moraine and rock along the north edge of the icefall to Perley Rock; now follow the névé north-easterly to the south-west wall, whence the ascent is as in route (1)

Time required: The Leprince Ringuet party occupied 12 hours.

(3) Take the Illecillewaet Glacier trail to the watercourse below the Overlook, follow to the rear of the Overlook, cross the snow-field to the col, and ascend by the north-west arête.

Time required: The Tewes party occupied 11 hours and 40 minutes.

Climb: Mt. Sir Donald is the most popular ascent from Glacier House and furnishes a splendid rock climb, varied in each route by ice and snow over the initial stages. While the north-west arête is the most difficult route, that by the Vaux Glacier was, until lately, the most interesting owing to a shallow couloir subject to volleys of falling stones, that had to be crossed willy-nilly. It can now be avoided by taking a rather difficult but not dangerous chimney discovered in 1909. The Leprince Ringuet route offers a distinctly difficult and dangerous piece of work where the south-west and south-east arêtes meet in the east corner of the cirque of the Vaux Glacier. This route has only once been attempted successfully, and unless very skilful in mountain work, two guides are necessary. On the north-west arête also two guides are required. On the stock route by the Vaux Glacier and south-west face, one guide to each novice is necessary. The mountain is subject to climatic conditions, and electric storms occur frequently. In short, it is a rendezvous for all the storms of its vicinity. Climbers may experience thrilling sensations when the rocks begin to buzz and the ice-axes to hum with electricity. The bergschrund at the base of the south-west wall is a variable quantity, during some seasons being a simple proposition and at others a very difficult and well nigh unsurmountable one. Notwithstanding, several ascents are made every year, often by novices; and, since the conquest in 1890, Sir Donald has been climbed fifty or sixty times, an appreciable number of climbers being ladies. (1911).

View: From its height and isolated position, the peak of Sir Donald commands extensive and superb views in every direction. Indeed to ascend Sir Donald is only to "taste blood," so many glaciers and snowy ranges of the Selkirks are spread out before the climber. On the other hand, looking from Glacier House the mountain itself is a superb sight It is stupendous in its influence, dominating the visitor. Wherever you wander through the thick woods or in the open places about the hotel, you are aware of the mountain's presence. In clear and sunny days, its sharp, grey pyramid pierces the soft azure sky, the azure showing deeper against the grey; high up on the face of its shoulder is packed the glacier whose thick wall shows icy-clear and vertical, while its lower left shoulder is clad with rich

Miss Canada and Swiss Guide crossing the Couloir on Sir Donald

Mesotah Falls, Asulkan Valley

green conifers. But it is under the cloud-balancings that Sir Donald is wonderful to watch. On a sunny morning early, you may look out towards the mountain and there, hanging over its head but not touching it, is a white cloud firm as some firm snowy texture and shaped like a monk's cowl with a cloak spread solidly out in the blue. You may see it stay there for an hour or more with slow movements on its farther edge, poised like a bird over its nest, or, to change the simile, like a white, white arch in pure cerulean blue. You may spend a week of fine weather at Glacier House, and every morning watch the thin mist which gathers in the narrow valley at night lift in drift of thinnest violet-grey cloud and play idly about the close green forest spires and creep upward over rock to vanish under the sun's morning rays in the upper heights.

Sir Donald Glacier -Name: In relation to Mt. Sir Donald.

Altitude: 5,500—9,000 feet.

Location: Directly below the south-east arête on the Beaver slope. It flows between Terminal Peak and the Peak of Mt. Sir Donald and drains to the Beaver River, and is not to be confounded with the Vaux Glacier seen from the Hotel.

Sir Sandford, Mt.—Name: By the Topographical Survey after Sir Sandford Fleming, K.C.M.G., Hon. President, Alpine Club of Canada.

Altitude: 11,634 feet.

Location: A little west of north of Rogers Peak and 27 miles distant from it.

The first ascent has yet to be made (1911). Several attempts are on record and several partial ascents. In 1906 Messrs. Comstock and Palmer with Manuel Dainard, a local guide of Golden, all members of the A.C.C., made the first attempt, only reaching an altitude of 6,500 feet at timber-line. The next year they returned to the attack, the party re-inforced by Prof. H. C. Parker also of the A.C.C., again failing. In 1910, Mr. Palmer, accompanied by Professors Holway and Butters, were again on the mountain and made some progress in its exploration, but failed of the summit. The same year the Rev. A. M. Gordon and Messrs. J. P. Forde and P. D. McTavish, all of the A.C.C., went in from Six Mile Creek via Sunbeam Lake; but owing to floods and disaster, they did not get to the base of the mountain. However, the reconnoitering and climbing done during those three seasons have added to a knowledge of the mountain and of the weather in its region. No doubt the giant so long defiant will fall beneath the tread of the mountaineers who have renewed the attack year by year.

Route: There are two routes to Mt. Sir Sandford.

(1) Starting from Six Mile Creek Station, twenty miles by railway east of Glacier House: ascend the ridge to the north and follow the "Esplanade" to the pass leading to Sunbeam Lake; then descend Spinster Creek to Gold Creek which flows below the mountain on the south side. (2) From Beavermouth: descend the Columbia River by canoe or boat to the mouth of Gold Stream and follow its valley to the base of the mountain. From Sunbeam Lake on the first route and from the mouth of Gold Stream on the second, all supplies and camp outfit must be carried on the shoulders.

Time required: Everything depends upon the weather, but a

week or 10 days is required. Thick forest, tropical undergrowth and fallen trees impede travel and make the expedition an arduous one. Mt. Sir Sandford is a huge dome-shaped mass covered with snow. The ascent is not practicable from the south or east, therefore it is necessary either to cross its eastern outlying spur or to work up Novelist Creek, a tributary to Gold Stream.

Six-Mile Creek and Station—Name: Local, owing to its being crossed by the railway about 6 miles from Beavermouth.

Location: A siding on the C.P.R. Two large branches flow from the north-west in deep-cut, heavily forested valleys and unite about a mile from the junction with the Beaver River. At this point a primitive station has been built by the Railway Company and used only by watchmen and labourers on the track.

Slick Creek—Name: By E. B. Hermon, a surveyor, in 1898.

Location: Joins the Incomappleux River (Fish Creek) from the north-west, immediately south of Flat Creek Pass. The pony-trail over Flat Creek Pass follows along its side to Jeopardy Slide.

Smart Mt.—Name: By the Topographical Survey, after James Smart, Deputy Minister of the Department of the Interior at the time the section in which it is located was surveyed.

Altitude: 9,517 feet.

Location: South of the railway, directly west of Mt. Bonney; a fine sharp-pointed peak rising from the midst of interesting snow-fields and glaciers. There is no record of an ascent, though it offers an interesting climb.

Route: (1) Reached most easily from the crossing of Flat Creek by the railway. From this point ascend the slopes on the east side to the shoulder of the ridge and follow the arête to the summit. (2) Another route is via the Lily Col, Mt. Swanzy, Clarke's Peak and a traverse of the south arête of Mt. Bonney; then across Bonney Névé to the Peak. This, however, would make a very full day and necessitate a night on the Flat Creek Ridge. A guide is necessary as the routes given are tentative.

Stony Creek—Name: Local, origin unknown.

Location: Flows from a glacier directly below the south arête of Mt. Shaughnessy on the east side. The glacier lies directly north of Hermit Glacier from which it is separated by a high rock spur. Stony Creek joins the Beaver River 2 miles north of Bear Creek Station. It flows in a deep wild gorge spanned at the railway crossing by a gossamer bridge. This is the most remarkable bridge on the section, a steel-arch truss, having a span of 336 feet and a rise from the abutments of 120 feet. The height from the stream to base of rail is 296 feet. It was built in 1893 and replaced the highest wooden structure of its kind in the world at the time.

Stony Mountain—Name: The original name of Mt. Hermit (see under Mt. Hermit).

Sugar Loaf, Mt.—Name: By Messrs. Huber, Topham and Forster, with reference to its appearance.

Altitude: 10,732 feet.

Location: Between Beaver River and Battle Creek, immediately south of Grand Glaciers.

First Ascent: By Messrs. Huber, Topham and Forster in 1890.

Route: (1) From Glacier House take the trail to Bear Creek

Station; then the Beaver River trail as far as the stream flowing from Grand Glaciers; follow this stream to their forefoot, and so up to the mountain top. The ascent is entirely on ice and snow.

Time required: 4 or 5 days, going time; for the round expedition 8 or 10 days. The camp outfit is carried by ponies—locally, a "pack train."

Route: (2) Take the Asulkan trail and Pass, the Dawson Moraine, Donkin Glacier and Pass, camping the first night in Mitre Creek Valley; the second day, cross the west end of Bishop's Range; the third day ascend the mountain from the west.

Time required: 3 days and 2 nights, going time; for the round trip, 5 days of fine weather. But always in the Selkirks the climber must provide for variable weather. By this route the camp outfit must be carried on the shoulders. For novices more than one Swiss guide is advised.

View: From the summit the views are of snowfields and glaciers cleft by deep-cut valleys filled with ice. Down their steep sides confluent glaciers tumble in wild confusion. Conspicuous among them and very striking are the Grand Glaciers, notably the northern one very much broken and crevassed, showing wonderful séracs and ice-falls.

Mt. Sugar Loaf itself presents an impressively beautiful view at close range. Except the south-west face, almost the entire massif is covered with snow. The mass of the mountain rises from the most southerly of the Grand Glaciers, in huge mounds and terraces of snow. Like Mt. Purity, it is literally entitled to be called a white mountain, a mountain of driven snow.

Sunbeam Lake—Name: By P. A. Carson, a surveyor of the Department of the Interior. A picturesque tarn on whose margin climbing parties may bivouac en route to Mt. Sir Sandford, noted above. Ponies can travel this far, going in from Six Mile Creek.

Surprise Creek—Name: By the C.P.R. Railway engineers. At this point a splendid view of Mt. Sir Donald, apparently blocking the Valley of the Beaver, suddenly greets and surprises the traveller.

Location: Flows to Beaver River between Cedar Creek and Stony Creek; crossed by the railway 3¼ miles northerly from Bear Creek Station; heads in an amphitheatre on the north-east flank of Mt. Shaughnessy.

Leaving Cedar Creek, travellers going west ought to keep one eye on the time table and another on the rapidly moving landscape, watching for that sudden first fine view of the Selkirk glaciers close above the Selkirk forests. The train, so obliging at other points of interest, might well pause here for a few moments or slacken its speed.

Swanzy, Mt.—Name: By Messrs. Abbott, Fay and Thompson, after the Rev. Henry Swanzy, W. S. Green's companion in the Selkirks on his expedition of 1888.

Altitude: 9,562 feet.

Location: The most easterly peak of the Bonney amphitheatre; at the head of Loop Brook, between Mt. Bonney and the Dome.

First Ascent: By A. Michel and Sidney Spenser.

Route: Reached from Glacier by the Mt. Abbott trail, Abbott Ridge, the north slopes of Mt. Afton and the Lily Col.

Time required: 5 hours. Unless skilled in mountaineering, a guide is necessary.

Climb: Rock, ice and snow. Magnificent views to north-east and south. From the summit of Mt. Swanzy the ascent of Mt. Bonney is simple. Follow the ridge, traversing the south side of Clarke Peak.

Swanzy Glacier—Name: By Messrs. Abbott, Fay and Thompson, in relation to Mt. Swanzy.

Altitude: 6,000—8,200 feet.

Location: On the south side of Lily Col; between Castor, Pollux and Leda on the north-east and the south spur of Mt. Swanzy on the west, and drains to Geikie Creek.

Swiss Peak—Name: By Carl Sulzer of Switzerland.

Altitude: 10,515 feet.

Location: The central sharp peak of Mt. Rogers.

First Ascent: By Carl Sulzer in 1890.

First Ascent by a lady: Gertrude E. Benham in 1904.

Route: From Rogers hut traverse the alps to the forefoot of Swiss Glacier; ascend either the glacier or its south-east moraine; traverse the Swiss Névé to the foot of the peak and climb by the east snow-couloir and east arête.

Time required: From the hut 4½ hours; from Glacier House, 7 hours. But climbers are advised to spend the night at the hut, not necessarily in it, and secure good travelling on the snow before the sun touches it.

Climb: Alps, moraine, snow and rock. The snow-couloir is a troublesome bit owing to iced rocks, but much of it may be avoided by keeping to the rock along the sides. Unless skilled in mountaineering, a guide is necessary. The climb is one of the most desirable in the district and will well repay the effort.

View: Practically the same as from Rogers Peak. (See Rogers Peak.) Herr Sulzer says: "The day was perfectly clear. As far as the eye could see were innumerable mountain peaks all around. In the southern foreground, the ice-girdled central mass of the Selkirks with its northern marking stone, the bold and fascinating Sir Donald, appeared especially beautiful. In the east, beyond the lower Selkirk Peaks, the long row of haughty Rockies lay spread in partly rounded and broken shapes—a scene I shall never forget. Sharply outlin dark rock masses interchanged with lofty snow-tops, all showed clearly and glistened in the farthest distance, where fading, their faint outlines were lost in the horizon. The northern groups showed some particularly high peaks and immense snow and ice-fields. Stately mountain-chains in the west completed the scope."

Swiss Glacier and Névé—Name: By the Topographical Survey in relation to Swiss Peak.

Altitude: 7,000—9,900 feet.

Location: Below Rogers and Swiss Peaks on the south side.

First Ascent: By Carl Sulzer in 1890. The Glacier is drained by a wild and picturesque torrent breaking into falls and cascades

and joining Bear Creek about a mile north-east of Rogers Pass Station.

Terminal Peak—Name: By the Topographical Survey.

Altitude: 9,773 feet.

Location: Most southerly point of the Sir Donald massif; at the north-east corner of the Illecillewaet Névé.

Route: Reached from Glacier House by trail to Illecillewaet Glacier; then the rocks on the north side of the ice to Perley Rock; a traverse of the névé to the foot of the peak and ascent of the final pitch.

Climb: Rock, snow and ice.

First Ascent: By W. S. Green and Rev. H. Swanzy in 1888. For novices a guide is necessary.

Time required: 4 hours.

View: It commands fine views of the Illecillewaet Névé, the east side of the Asulkan Valley, the Dawson Range, and Beaver Valley both up and down; also of Bald Mountain, Prairie Hills, and the Dog-tooth Mountains. Directly below to the north-east is the Sir Donald Glacier which is not to be confused with Vaux Glacier on the other side.

Tomatin Peak—Name: By the Topographical Survey, after Tomatin, a village on the Findhorn River, Scotland.

Altitude: 9,445 feet.

Location: North-west Peak of Mt. McBean; between Incomappleux River and Van Horne Brook.

No ascent has yet been recorded (1911). (For route, views, etc., see Mt. McBean.)

Topham, Mt.—Name: By the Topographical Survey, after Harold W. Topham, who explored in the Selkirks with Messrs. Huber, Sulzer and Forster in 1890.

Altitude: 9,478 feet.

Location: On the west side of Beaver Valley, directly south of Mt. Macoun, and east of Mt. Selwyn: the Déville Glacier flows between.

First Ascent: There is no record of an ascent (1911).

Route: From Glacier House there are three routes, viz: (1) By Asulkan Pass, Donkin Pass, Bishop's Glacier and Deville Névé. (2) By Bear Creek, Beaver River trail, Glacier Circle and Déville Glacier. (3) This is the most direct and practicable route: Ascend the Illecillewaet Glacier and traverse the full length of its névé; descend to Glacier Circle and camp for the night; the next day ascend the peak via the Deville Glacier and spend the second night in camp at Glacier Circle, returning to Glacier House the third day.

Time required: For the all-round trip 3 fine days. All supplies must be carried on the shoulders.

Climb: Rock, snow, and ice. Unless an expert mountaineer, a guide is necessary.

The opening between Mts. Macoun and Topham forms the portal to Glacier Circle. Mt. Topham is a low-lying, elongated rock-mass, closely resembling Mt. Macoun. At one time the two mountains were joined, but the Déville Glacier in the course of its flow towards Glacier Circle, forced a passage-way between the two peaks, thus

cutting through the mass of rock. Mr. Topham was the first on record to visit Glacier Circle and to camp on its meadow.

View: The views from Mt. Topham are excellent of the Beaver Valley, both up and down; of the Déville Névé, of the Purity, Bishop's and Dawson Ranges; and of Mts. Sugar Loaf, Beaver and Duncan.

Truda Peaks—Name: By the Topographical Survey, in recognition of the first ascent by a lady of Rogers, Grant, Fleming and Swiss Peaks—Gertrude E. Benham.

Altitude: 10,216 feet.

Location: Three sharp peaks forming the eastern extremity of the Mt. Rogers massif. There is no record of any ascent (1911). When climbing Swiss Peak, Herr Sulzer traversed the south face of Truda Peaks below the summit.

Route: Reached from Glacier House by the route to Swiss Peak as far as the col between it and Truda Peaks, when you turn to the right.

Time required: From Rogers hut, 4 hours would bring you to the summit; from Glacier House, 7 hours. Just as for the neighbouring peaks, the advice is to bivouac at the hut or near by, and get an early start with good travelling on the Swiss Névé.

Climb: Snow and rock; an interesting and satisfactory expedition, too difficult. For novices or unskilful climbers, a guide is necessary.

View: The views are the same as from Swiss and Rogers Peaks. (See Rogers Peak.)

Tupper, Mt.—Name: Formerly Mt. Hermit with reference to a gendarme on its west arête bearing a striking resemblance to a hermit with a dog at his feet. By Order in Council the name was changed to Mt. Tupper in honour of Sir Charles Tupper, one of the fathers of Confederation.

Altitude: 9,229 feet.

Location: On the north side of Rogers Pass directly opposite Mt. Macdonald.

First Ascent: By Wolfgang Koehler, with guides Edouard Feuz, Jr., and Gottfried Feuz, in 1906.

Second ascent and first by a lady: Jean Parker, with H. H. Worsfold and guides Edouard Feuz, Sr. and Jr., in 1908.

Route: From Rogers hut by the alps, the left moraine of Swiss Glacier, the west arête and south face of the mountain.

Climb: Mostly a good stiff rock climb, including a troublesome chimney, but the rock is unusually firm. Unless skilled in mountaineering, a guide is necessary.

Time required: From the hut, 4 or 5 hours; from Glacier House some 7 hours.

A record climb was made on Mt. Tupper in 1910 by E. Oliver Wheeler, who evaded the ugly little chimney by negotiating a ledge to the right. Mr. Wheeler's account is quoted in part: "Finding the hut filthy and fairly bristling with porcupines, I went up the grass-slopes above it and camped under a rock on the last grass below the moraine of Rogers Glacier. With an oiled silk sleeping sack and a light double blanket, I managed to sleep comfortably in spite of thunder and a heavy shower in the night. At 3 a.m.

E. O. Wheeler, M.E.

the weather was warm and doubtful; and I decided to be down the mountain before the storm came. At 3.25 I left my bivouac in the twilight and started off under the snout of the glacier and up the scree and snow-slopes, reaching the ridge joining Mts. Rogers and Tupper, at 4.15. I followed the ridge, keeping as much as possible to the snow, which was in good condition, until nearly at the gap south of the Hermit when I took to the rocks for good. Passing the gap, I swung out to the right below the Hermit, and up some ledges to the little chimney whose looks I did not like; and I swung again to the right on a ledge and up the face to a level plateau above the Hermit; and so to the final pitch, reaching the summit at 5.30."

The weather looked more threatening; and after 15 minutes, Mr. Wheeler hurried down by the same route, picking up his stuff at the bivouac and reaching Glacier House exactly at 9.10 a.m. in time to breakfast with Mr. Worsfold who, with Miss Parker, had made the second ascent. Mr. Wheeler's route and the earlier routes were practically the same except that he discarded the chimney. Dr. J. W. A. Hickson also made the ascent in 1910.

No doubt this will become a stock climb on account of the brilliant rock-work it affords It was long considered an impregnable mountain. Its north side above Tupper Glacier still appears quite too formidable (1911) and remains to be conquered by some daring climber.

Tupper Crest—Name: By the Topographical Survey in relation to Mt. Tupper.

Altitude: 8,563 feet.

Location: Shoulder extending westerly from Mt. Tupper to Swiss Glacier. It is traversed en route from Rogers hut to the summit of Tupper.

First Ascent: By Carl Sulzer in 1890. Except for novices, guides are unnecessary. An easy rock climb with a short stretch of névé.

View: Tupper Crest commands a good view of the south slopes of Rogers Pass.

Tupper Glacier and Névé—Name: By the Topographical Survey, in relation to Mt. Tupper.

Altitude: 6,500-8,500 feet.

Location: Below the north face of Mt. Tupper and drains to Beaver River.

First Ascent: By the Topographical Survey in 1901.

Route: (1) Reached from Rogers hut via Swiss Glacier and Névé. (2) From Bear Creek Station by ascending the watercourse crossing the railway directly south of that point.

Twisted Rock—Name: By the Topographical Survey, from its strangely contorted strata.

Altitude: 9,345 feet.

Location: The terminal point of a spur from Mt. Fox, though really a part of the arête joining it to Mts. Dawson and Selwyn; at the eastern corner of the Dawson Amphitheatre and north-west of the end-wall.

The interior convulsion of the earth that upheaved this rock has caused the sub-strata of which it is composed to twist in an almost

complete circle; and the eroding of the amphitheatre with the weathering of the exposed surface has laid the formation open to view. At the top of the peak, for it has the appearance of a peak seen from below, the strata stands nearly vertical. They then descend, describing a pear-shaped synclinal curve, and rise upward until they lie beside the original folds. The height is a little over 1,000 feet.

Ursus Major, Mt.—Name: By the Topographical Survey in relation to Bear Creek.

Altitude: 8,930 feet.

Location: A mountain of the Hermit Range rising at the head of Bear Creek, on the north side of Baloo Pass.

First Ascent: By the Topographical Survey in 1902.

Route: (1) Reached from Glacier House by trail to Rogers Pass and thence by trail up Bear Creek to the summit of Baloo Pass whence the remainder of the route is obvious.

Time required: From Baloo Pass, 1½ hours; from Glacier House, 5 hours.

(2) A second route to Baloo Pass is via the Loop trail and Cougar trail past the Caves of Cheops. Both routes require the same time.

Climb: nearly all rock. For novices a guide is necessary. From the summit there are good views of Cougar Valley, Bear Creek Valley and the Valley of Mountain Creek, and of the peaks to the north. The mountain carries glaciers on its north and south faces.

Ursus Minor, Mt.—Name: By the Topographical Survey in relation to Bear Creek.

Altitude: 9,026 feet.

Location: A mountain of the Hermit Range on the north side of Bear Creek, between Ursus Major and Mt. Grizzly. Most easily reached by trail to Rogers Pass and up Bear Creek.

Time required: 5 hours.

Climb: Chiefly rock. A guide is necessary for novices.

View: Nearly the same as from Ursus Major. A small glacier is on its north face.

Uto Peak—Name: By Prof. C. E. Fay.

Altitude: 9,610 feet.

Location: A peak of the Sir Donald Range immediately north west of Mt. Sir Donald.

First Ascent: By Messrs. Huber and Sulzer in 1890.

Route: Reached from Glacier House by the water-course leading to the Overlook; thence to the arête between Eagle and Uto Peaks and up Uto arête to the summit.

Time required: 4 hours.

Climb: rock. A guide is necessary for novices.

View: Uto Peak commands excellent views on all sides except that next to Mt. Sir Donald whose near north-west arête shuts off the outlook in that direction. The view of Rogers Pass Basin is particularly good, and of the Beaver River Valley looking down; also of Avalanche Glacier immediately above which the peak rises on the south side. Of the view from the arête Herr Huber says: "We stood upon the mighty partition which, extending from north-west to south-east, confines the glacier lands of the Selkirks on the east.

What a contrast! Ascending in a southerly direction towards the peak upon the precipitous ridge, we perceived at our left, gently sloping forms of wooded green heights, but at our right, peak after peak, black naked prongs, and ice-clad ridges pierced the blue sky, and between right and left stood the mighty mass of Mt. Sir Donald; altogether a picture of peculiarly rare beauty."

Uto Glacier—Name: In relation to Uto Peak.

Altitude: 5,300 feet—8,200 feet.

Location: On the south side of Uto Peak, between it and Mt. Sir Donald; and drains easterly to Beaver River.

Van Horne Nêvé and Glacier—Name: By W. S. Green, after Sir William Van Horne, a Director of the Canadian Pacific Railway, and general manager at the time of Mr. Green's expedition to the Selkirks.

Altitude: 5,300 feet—8,700 feet.

Location: Immediately west of Mt. Purity, and about 6 square miles in area. The nêvé is a very beautiful one, being terraced in every direction and broken by numerous nunataks. Directly at the north corner rises the snow-draped form of Mt. Purity. The glacier is extremely picturesque; from a *nunatak* rising in the centre a well-developed medial moraine is built on a curve between its two ice-flows. On the west side it is fed by hanging glaciers on the slopes of Mt. McBean.

Route: Reached from Glacier House by the Asulkan trail and Pass, Geikie Glacier and Creek to its junction with Van Horne Brook, and following the brook to its source in the glacier.

Time required: It might possibly be reached in one day from Glacier House, but is more likely to take 2 days. All camp outfit must be carried on the shoulders.

Van Horne Brook—Name: By W. S. Green with reference to Van Horne Glacier.

Location: Between Mts. Purity and MacBean, flowing to Incomappleux River. A mile above the confluence it is joined by Mitre Creek, flowing from Bishops Glacier. On the west side Van Horne Brook is fed by the run-off from numerous hanging glaciers in pockets on the sides of Mt. McBean. These small glaciers are very picturesque. The stream flows in a deep, well-forested valley. Its confluence with Geikie Creek makes the Incomappleux River. Geikie Creek is the larger stream.

Vaux Glacier—Name: By the Topographical Survey, after the Brothers Vaux, of Philadelphia, who have taken a great interest in, and have done much good work in connection with the mapping, photographing and measuring of the Illecillewaet and Asulkan Glaciers in the Selkirks.

Altitude: 6,500 to 8,500 feet.

Location: A small glacier on the south-west face of Mt. Sir Donald; drains to the Illecillewaet River.

First Ascent: By Messrs. Huber and Sulzer in 1890. The stock route of Mt. Sir Donald passes up the centre of this glacier. It is a good sample of the "cliff glacier" and during the warm days of summer sends great showers of ice-blocks to feed the main body below.

Wheeler, Mt.—Name: By the Topographical Survey after A. O. Wheeler at that time in charge of the survey.

Altitude: 11,023 feet.

Location: The most easterly massif of the Purity Range; at the south-west corner of the Deville Névé.

Route: Reached from Glacier House by the Asulkan trail and Pass, Geikie Glacier, Dawson Moraine, Donkin Glacier and Pass, Bishop's Glacier and Névé; thence following the southerly arm of the névé between the Bishop's and Purity Ranges and ascending the snow-slopes to its summit.

Climb: Chiefly on snow.

Time required: 3 days with camp; 2 nights below Donkin Pass on Mitre Creek. All camp supplies must be carried on the shoulders. Unless skilled in mountaineering, a guide is necessary.

View: The summit commands an exceptionally fine series of views: South, lie the Grand Glaciers in a chaotic confusion of crossed crevasses and grotesque séracs, the well-defined medial moraine from Grand Mountain showing clearly; while across the glaciers rise the snow-terraces and mounds of Mt. Sugar Loaf. East, the summit overlooks Déville Névé, the Dogtooth Mountains and the Spillimacheen Mountains beyond the Beaver Valley; and across the Dogtooth Mountains on a clear day can be recognized the peaks of Mt. Goodsir and the sharp point of Chancellor Peak. North, the view carries the length of the Déville Névé across to the Illecillewaet Névé with Sir Donald at its northern extremity; and includes the serried peaks of the Bishop's Range. West and south-west there is the long sweep of glaciers flowing north from between the peaks of the Purity Range and the snowy peaks themselves; next, there are the Battle Glaciers, their three medial moraines sharply defined and their confluent hanging glaciers lining the west side of the Battle Amphitheatre, those "glacierettes" which nourish the trunk below.

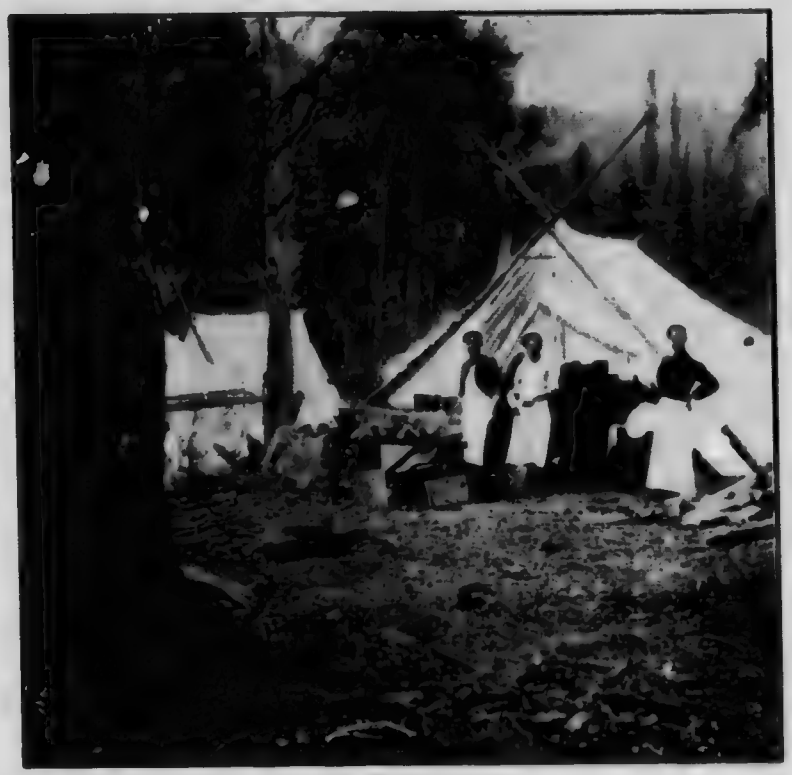
Whistler Falls—Name: By the Topographical Survey, with reference to the number of hoary marmots (*Arctomys Columbianus*) found in the rocks about them.

Location: On a stream flowing from a glacier between Mt. Ursus Major and Catamount Peak. At the falls the stream comes leaping down the steep northern slopes of Cougar Valley and joins Upper Cougar Brook a quarter of a mile above the point where the brook first disappears into the Caves of Cheops.

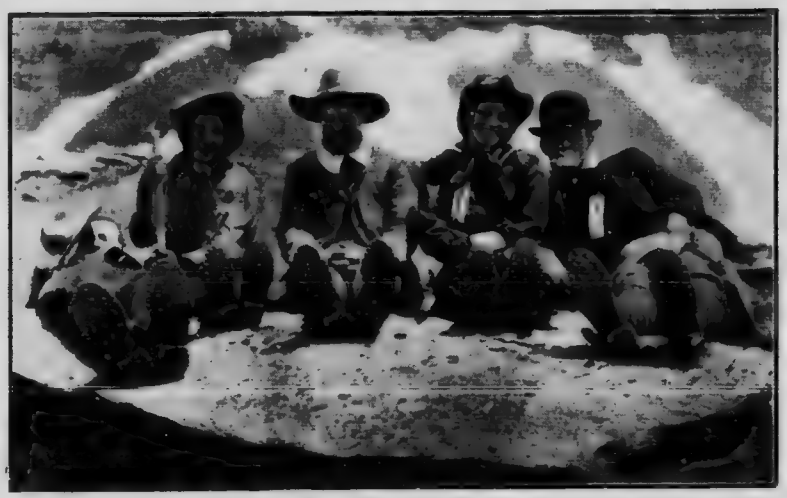
Witch Tower, The—Name: By the Topographical Survey.

Altitude: 8,080 feet.

Location: A fantastic group of rock-shapes on the north-western shoulder from the summit of Mt. Fox. It is situated immediately above the camp at the Dawson moraine. The configuration suggests a number of hideous old giant beldames leaning from the parapet of a rock-tower and scattering vituperation broadcast over the earth.



A. C. C. Cooks in Camp



Soles after a Week's Climbing

CHAPTER III.

THE CAVES OF CHEOPS.

(Nakimu Caves.)

(Condensed from an Official Monograph by A. O. Wheeler, F.R.G.S.)

Discovery and Exploration: The first persons known to have seen the Caves of Glacier Park were two prospectors in the Cougar Valley, D. Woolsey and Walter Scott, who descended to the bottom of the "Gorge" by means of a fallen tree. This was before 1902 and the discovery attracted little attention. In the summer of 1902, while encamped on the summit of Baloo Pass during a topographical survey of the peaks in that region, Mr. A. O. Wheeler passed close to the Caves without waiting then to explore. Nothing more was heard about them until May, 1904, when C. H. Deutschman visited Cougar Valley in the dual capacity of hunter and prospector. Finding a series of caves, he "located" them as a mineral "claim."

The next year in May, a party of twelve visited the place which had meanwhile aroused much interest. Among them were Superintendent Douglas of the Rocky Mountains Park, and Mr. W. S. Ayres, Mining Engineer, who came to report upon the discovery to the Federal Government. In the same year (1905) Mr. Wheeler, then in charge of the Government's Topographical Survey, explored and surveyed Cougar Valley and the whole series of the caves, his work being greatly facilitated by Deutschman who had, alone and by the light of a tallow candle, explored caves and pot-holes and corridors. Mr. Wheeler pays tribute to his forerunner's pluck and courage: "Added to the thick darkness, there was always the fierce, vibrating roar of subterranean torrents, a sound most nerve-shaking in a position sufficiently uncanny without it. Huge cracks had to be crossed and precipitous descents made in pitch darkness, where a mis-step meant death or disablement." This is the man retained by the Government as caretaker and exhibitor since the Caves have been equipped for visitors.

Mr. Wheeler describes his own descent into the Gorge, down a knotted rope, in August, when the stream at high water was pouring into the opening with tremendous velocity. Although by wading waist deep he crossed the icy torrent, it was then impossible to penetrate more than 200 feet of the subterranean way. Later in the month, Deutschman was able to explore the whole series of passage-ways reached from the Gorge. In October Mr. Wheeler surveyed this series and explored a number of new ones. There was snow two feet deep in the valley and a somewhat arctic temperature, while the dark caverns below were warm. Later in the same month Mr. Ayres also visited the same passage-ways and some additional ones. By this time the snow in the valley above was four feet deep.

Area: The whole system, so far explored, is covered by a surface measuring 2,910 feet extending from the triangulation station near Gopher Bridge entrance to the Wind Crack below Lookout Point; and the total length of the underground passage-ways is 5,550 feet. From the first disappearance of the stream under Gopher Bridge to the lowest point explored below the Bridal Chamber.

there is a fall of 411 feet; and from the same point to the Wind Crack, 465 feet.

The Valley of the Caves: The Valley of Cougar Brook is divided into two sections with wholly different origins. The Caves are situated where these sections meet on the lower slopes of Mt. Cheops. **The Upper Valley,** 2½ miles long, extending from Cougar Pass to Point Lookout, is a pronounced type of the "hanging valley," having been carved in a shallow, spoon-shaped, cross-section by the glacier once filling it but now shrunken to very small proportions at the valley's extreme head. An old lake-bed half a mile long when some water lies in summer covers part of its floor. It is enclosed by Mt. Bagheera, Catamount Peak and Mount Ursus Major on the north, and by Cougar Mt. on the south, all having small glaciers. At its head, Cougar Pass leads across the shrunken glacier to a steep ravine descending to the railway below Ross Peak Station.

Mr. Wheeler writes with enthusiasm of this upper valley, none more beautiful among alpine valleys. In every direction silver waterfalls leap from the snows and glaciers above, uniting in one central stream which falls in foaming cataracts to the little lake-bed whence, continually increased by fresh falls, it rushes through luxuriant meadow-lands in a second series of cascades that have worn down to bed-rock showing the veneer of soil overlaying it. Here the trees are chiefly spruce and balsam attaining at this elevation a freedom and symmetry impossible in the crowded forest at lower altitudes. Singly or in companies they grow high, their lower dark branches gracefully sweeping above the light green turf.

Throughout spring and summer all the meadows, parks, and mountain slopes are gay with a procession of flowers, profuse and brilliant. In early spring whole acres shine yellow with the lovely exotic-looking lilies, Adder's Tongue (*Trollius laxus*) growing low and luxuriant; the scarlet crimson Painter's Brush (*Castilleia*) blazing in the open and on the lower slopes; the deep-blue Larkspur (*Delphinium bicolor*); the pink and purple Asters; the crimson and yellow Monkey-Flower (*Mimulus*) in the streams' beds and where the turf is wet; the mountain heather, false heaths (*Bryanthus* and *Cassiope*) high in the valley and on the alps below the rocks; the pink-flowering Moss (*Silene acaulis*) beautiful in blossom immediately below the ice; all these and many species as beautiful but more rare, bloom in this hanging valley. Truly the immense old mountains have their own charming spring and summer in their wildest ravines.

The fauna of the Upper Valley appeals to both hunter and naturalist. The mountain goat (*Haplocerus montanus*) is often seen and his tracks are everywhere on the heights; the grizzly bear (*Ursus americana*) is a frequent visitor. Of the smaller mammals, are notable the hoary marmot or whistler (*Arctomys Columbianus*) occurring in great numbers and unusual size, their whistles louder and shriller here: Say's squirrel (*Spermophilus lateralis*) and Parry's marmot (*Spermophilus Parryi*); and the "Little Chief" hare (*Lagomys princeps*). There are a few birds, among them the ptarmigan (*Lagopus leucurus*)—a flock may often be seen; the water ousel (*Cinclus icanus*) a funny little bird with a very sweet note who flits from stone to stone along the streams, continually dipping:

the black-headed jay (*Cyanocitta [illegible]ori annectens*) and the Whiskey Jack (*Perisoreus canadensis [illegible]*).

The hanging valley of [illegible] Cougar has still another magnet. From its upper end, a mere scramble will bring the student to the ice of these small glaciers where he may study at ease their structure and action, looking into miniature crevasses and learning how moraines of rock-detritus are made by the downward flow of the ice.

At the site of the Caves, Cougar Valley turns from a northeasterly direction and falls sharply 2,000 feet from Lookout Point to the railway tank at its mouth, a distance of about two miles. This Lower Valley which is V-shaped has been carved out by water-erosion. Except its lower part adjacent to the railway, its sides are timbered in patches only, a rank growth of alders, bracken and coarse gr[illegible]s replacing the ancient forest swept away by avalanches. Where the railway joins the Illecillewaet, the typical Selkirk forest grows—Douglas fir, hemlock, cedar, and white pine. Through the lower half of the Lower Valley, the stream flows in a narrow canyon.

The Approach to the Caves. (Going from Glacier House via the Illecillewaet-Cougar Trail.)—About 1⅓ miles from the mouth of Cougar Valley there is a place in the main stream where water is welling up from the ground greatly increasing its volume. This is supposed to be the exit of the underground flow from the Caves. A third of a mile further on, there issues from two lateral cracks in the rock across the brook from the trail, a chill sharp current of air. The place is named the Wind Crack. It is the first intimation on the trail, of the Caves.

As we continue upward, the picturesque Goat Falls break over a cliff and disappear in the ground 60 feet below. (On the map it is marked Entrance No. 4.) Here the trail swings to the left and climbs some 200 feet up a narrow gully where the hillsides come close together. It is the junction of the Lower and Upper Valleys. Directly above on the right is Point Lookout commanding a view of the whole Lower Valley, of the Illecillewaet Glacier, and the peaks and névés to the south. Immediately beyond Point Lookout is "Entrance No. 3," the first opening reached by trail from Glacier House and leading in pitch darkness with a sheer drop of 120 feet to the "Pit." The little draw which the trail follows is now cut off by the "Gorge," a deep open gash in the valley through which Cougar Brook flows. Therefore the trail turns to the left and soon reaches the visitors' camp ground where are the cabins. Across a small ravine is the cabin occupied by Deutschman, caretaker and guide.

Formation and structure: Subterranean waterways other than medicinal mineral springs are rarely found either in the Rockies or Selkirks. During fifteen years of topographical surveying in both Ranges, Mr. Wheeler met but three: the stream forming the source of the Amiskwi Falls near the head of Amiskwi Valley west of Emerald Lake, Crows Nest River near the summit of Crows Nest Pass, and the underground river of these Caves of Cheops.

The occurrence of limestone is rare in the Selkirks which consist almost entirely of archaean rock concerning whose origin there is considerable difference of opinion. The phenomenon of these caverns is due to a deposit of crystalline limestone. Specimens of the stone

from which the Caves have been carved were examined by Dr. Hoffman, Government Mineralogist, with the following pronouncement: "A (from the Auditorium) is a light, bluish-grey, fine-crystalline, massive, non-magnesian, slightly ferruginous limestone. B (from near Entrance No. 3) is a light and dark bluish-grey, banded, fine crystalline, massive, non-magnesian, slightly ferruginous limestone. C (from the Pit) is a dark bluish-grey, fine-crystalline, massive, slightly magnesian and slightly ferruginous limestone, traversed by tortuous veinings of wh (crystalline) calcite. D and E (from the white Grotto and the Judgment Hall) being samples of lime-formation on walls and ceilings, consist of a very light buff-coloured coating, having a botryoidal surface of from half an inch and less to a little over two inches in thickness, of a non-magnesian very slightly ferruginous carbonate of lime." To ascertain their value as marbles, one surface of each crystalline sample was polished, the result showing nothing exceptional, being coarse-grained and not yielding to a very superior polish. That from the bottom of the Pit presenting a rich grey-black polished surface, shot with zig-zag streaks of crystallized calcite, was the handsomest. Thus, with a difference in colouring, the general composition of the rock is the same throughout the system.

Most of the rocks forming this portion of the Selkirks are dull white and grey quartzites and grey to greenish-grey schists. Mr. Ayres reports finding in the old channel where the Terror is situated, gravel of dark brown or red quartzite. As dark-coloured quartzites occur very rarely in this region, the brown and red tints have been the results of weathering. Pebbles and small water-worn pieces of the same material were seen within Entrance No .3, probably carried from a common source. Quartzite boulders were found in the interior of the Gorge series, doubtless brought from a distance by the subterranean flood. Outcropping from the glacier overlaying the summit of Cougar Pass may be seen a mass of almost pure white quartzite, the fragments lying about in huge rectangular blocks.

Concerning the origin of the Caves, Mr. Ayres holds that the passageways are due entirely to water-erosion owing to a small stream of Cougar Creek having found its way ages ago through a bed of limestone; and that the caverns gradually enlarged in irregular forms, through the long process of disintegration.

While holding to this theory in part, Mr. Wheeler thinks that a more potent and far-reaching agency has been at work than Nature's ordinary methods of erosion and disintegration. There is no doubt that these particular beds of limestone are badly shattered in the mass as the tributary streams bear witness: Gopher Falls, Goat Falls and a periodical stream flowing into Entrance No. 3, all join the main stream by underground ways. The rift of the Gorge lies directly across the dip of the strata, the dip being a little south of east at an angle of between 40 and 50 degrees; and the same is true of the subterranean bed of the creek from the east end of the Witches' Ball-room. When the temperature is well below zero in the valley above, there is no frost found in the caverns a short distance from the entrance. Thus, two important factors of disintegration, frost and sun, have been wanting. Moreover, the boulders already referred to are of very large size, the

Marble Markings in interior of Caves of Cheops

Goat Falls disappearing into Caves of Cheops

indications being that they were displaced a very long time ago. This would point to some severe shock or series of shocks caused by earthquakes. That such disturbances have occurred in this locality, Professor W. H. Sherzer proves in his monograph on the Glaciers of the Rockies and Selkirks (1904). Professor Sherzer found at some distance from the present ice-tongue of the Illecillewaet Glacier which is but seven miles or so from the Caves two moraines composed of large blocks of quartzite, one at least being estimated at some 2,000 tons weight, retaining the original shape in which they were cast from the peaks above. To distinguish such moraines from ordinary moraines composed of ice-worn boulders, Professor Ralph Tarr, an authority on glaciers, has named them bear-den moraines from the resemblance of the openings between the great blocks to bears' dens.

Mr. Wheeler asks how and when these moraines were formed, seeing that no glaicers of this age are capable of transporting such a load, and no like quantities of material necessary to form that kind of moraine, are ever now found on the névé below the peaks. And he directs us to Prof. Sherzer's empirical answer to the question, who cut down trees between the two moraines mentioned and counted their rings. The oldest was found to be 580 years old. Allowing for the time required to collect sufficient soil to permit growth at all, the age of the oldest moraine would be more than 600 years. Allowing again for the time necessary to carry the material forming the inner moraine, the earthquake would have occurred during the thirteenth century. That a seismic disturbance occurred in old Canada as late is the seventeenth century is recorded in the "Jesuit Relations" translated by Prof. Thwaites. A bit of the record is quoted: "On the 5th of February, 1663, towards half-past five in the evening, a loud roaring was heard at the same time throughout the length and breadth of Canada. . . . . On level ground, hills have arisen; mountains on the other hand have been depressed and flattened. Chasms of wonderful depth, exhaling a foul stench, have been hollowed out in many places, plains lie open far and wide where there were formerly very dense and lofty forests. Cliffs, although not quite levelled with the soil, have been shattered and overturned."

Mr. Wheeler concludes his thesis concerning the making of these underground chambers in these terms: "If bear-den moraines can be so accounted for, it is not unreasonable to assume that a seismic disturbance once shattered this bed of crystalline limestone and precipitated Cougar Creek into subterranean channels which the water and time have enlarged to their present size; moreover, that subsequent shocks are responsible for the large quantities of debris that litter their floors. This hypothesis would explain the crack of the Gorge and similar chasms beneath the surface."

Viewed in the light of an earthquake, the subterranean waterways (for the most part now in disuse) comprising the Caves are of comparatively simple origin. They are of exceeding interest on account of the unexpected forms of the various chambers, corridors, and potholes; but more for the opportunities offered to study crystalline limestone structure and the erosive action of the prehistoric stream in conjunction with the sediments carried by it at flood-stages in the past.

DESCRIPTION OF THE CAVES.

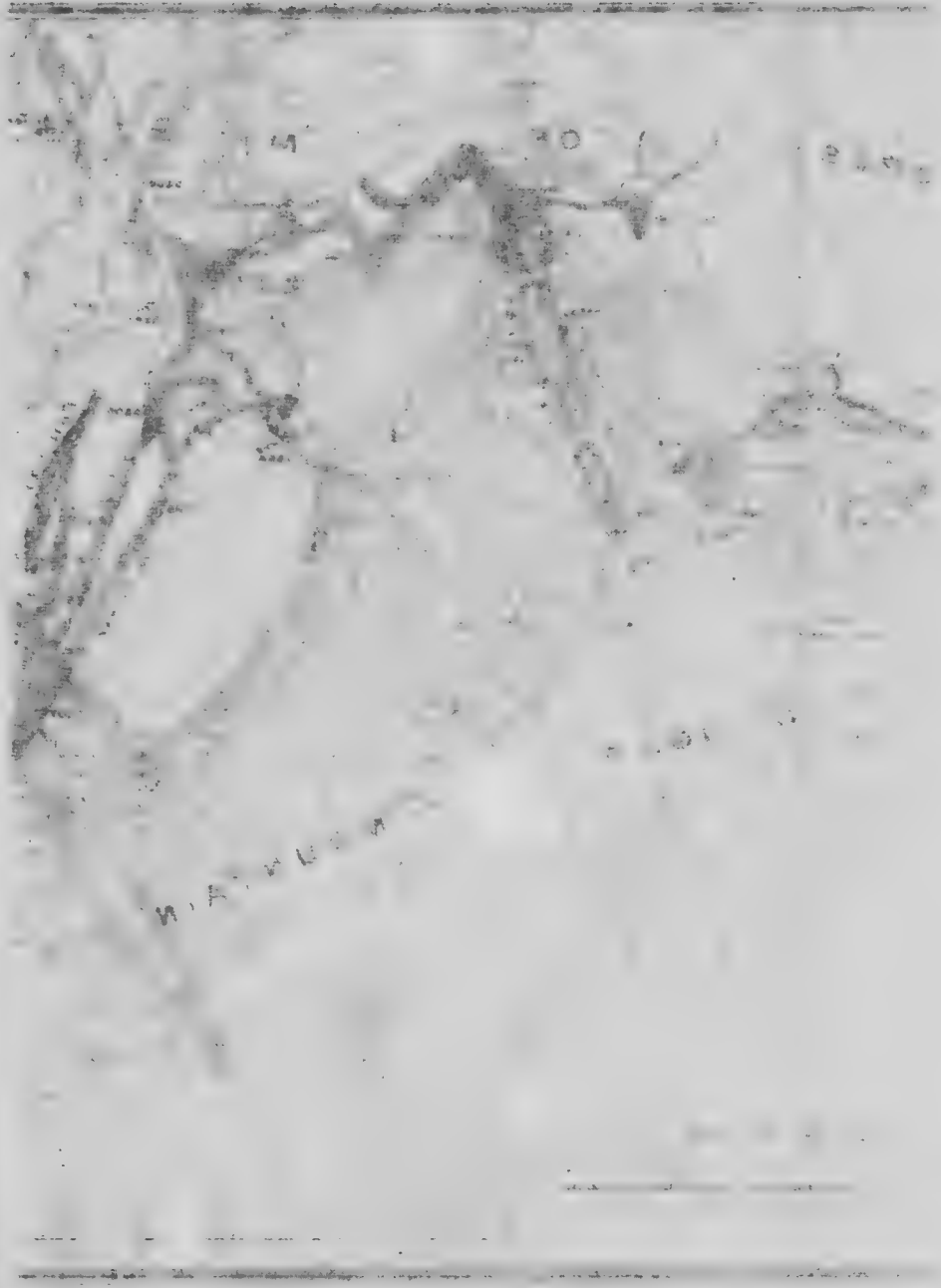
Gopher Bridge Series: The Caves are divided into three sections: the Gopher Bridge Series, the Mill Bridge Series, the Gorge Series. Let us now approach them from the Upper Valley. As we have seen, Cougar Brook, leaving the little lake-bed, flows in a succession of small cataracts through the open alplands. At the end of half a mile or so, without warning it drops into a cavity and 450 feet further down quietly re-issues from the underground, having dropped 30 feet on the way. The overground between this entry and exit is named Gopher Bridge from being a special habitat of the little Parry marmots abounding in the valley. Directly opposite the first place where the brook disappears, two cataracts tumble down the mountain side and uniting flow parallel to it when they also disappear to join the main stream underground. On the map they are named Gopher Falls and Gopher Hole.

The group under Gopher Bridge was at first entered through the opening marked "Old Entrance" on the map, at one time the entrance of the stream itself, but a natural dam gradually forming there, it forced its present entrance. (See map). The "Old Entrance" involving much squeezing through narrow cracks and wriggling over dirty rocks, a more commodious vestibule was made by enlarging a small natural opening half-way between it and the stream's present entrance.

Mr. Wheeler's first visit was by the "Old Entrance" and he took observations by the light of gas lamps and magnesium wire. Coming to the place directly over the torrent he describes what he saw: "Standing on a ledge that overhangs a black abyss, the eye is first drawn by a subterranean waterfall heard roaring immediately on the left. It appears to pour from a dark opening above it. Below, between black walls of rock, may be seen the foam-flecked torrent hurtling down the incline until lost in dense shadows. Overhead, fantastic spurs and shapes reach out into the blackness, and the entire surroundings are so weird and uncanny that it is easy to imagine Dante seated upon one of these spurs deriving impressions for his Inferno. As the brilliant light gives out, the thick darkness makes itself felt and instinctively you feel to see if Charon is not standing beside you. This subterranean stream with its unearthly surroundings is suggestive of the Styx and incidentally supplied the name Avernus for the cavern of the waterfall."

From the new entrance, called on the map "Gopher Bridge Entrance," a small passage joins the underground way of the brook and by following along its edge the Cavern of Avernus is reached. On the way several small chambers are passed, originally potholes carved out of the rock by the waters, but since much distorted in shape owing to disintegration of the cleavage planes.

The Mill Bridge Series: Emerging from under Gopher Bridge, Cougar Brook pours down a rock-cut for 350 feet when it again disappears in a spectacular whirl of spray. It re-appears 300 feet further on after having dropped 85 feet. The overground here is called Mill Bridge from the noise of underground waters resembling a mill in operation. The rock-cut is but 8 or 10 feet wide and is named the Flume from its likeness to a mill-race. Its upper half presents a succession of cascades, and the sides show curious small



Plan Showing

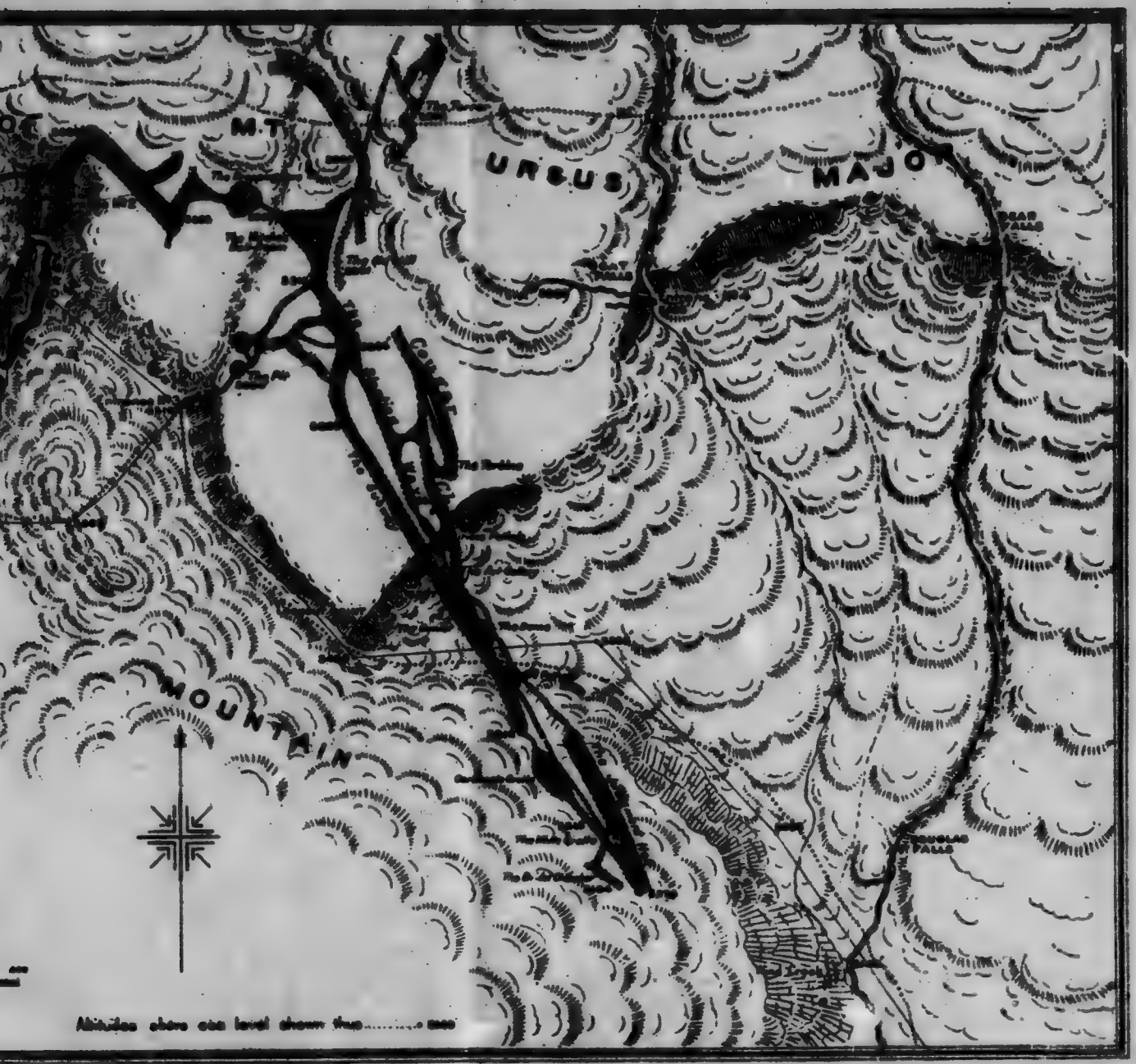
THE LOCATION AND EXTENT OF

THE NAKIMU CAVES

AS FAR AS AT PRESENT EXPLORED

From Surveys by A.O.Wheeler F.R.G.S.,
Topographer, Department of the Interior
October 1905.

SCALE OF FEET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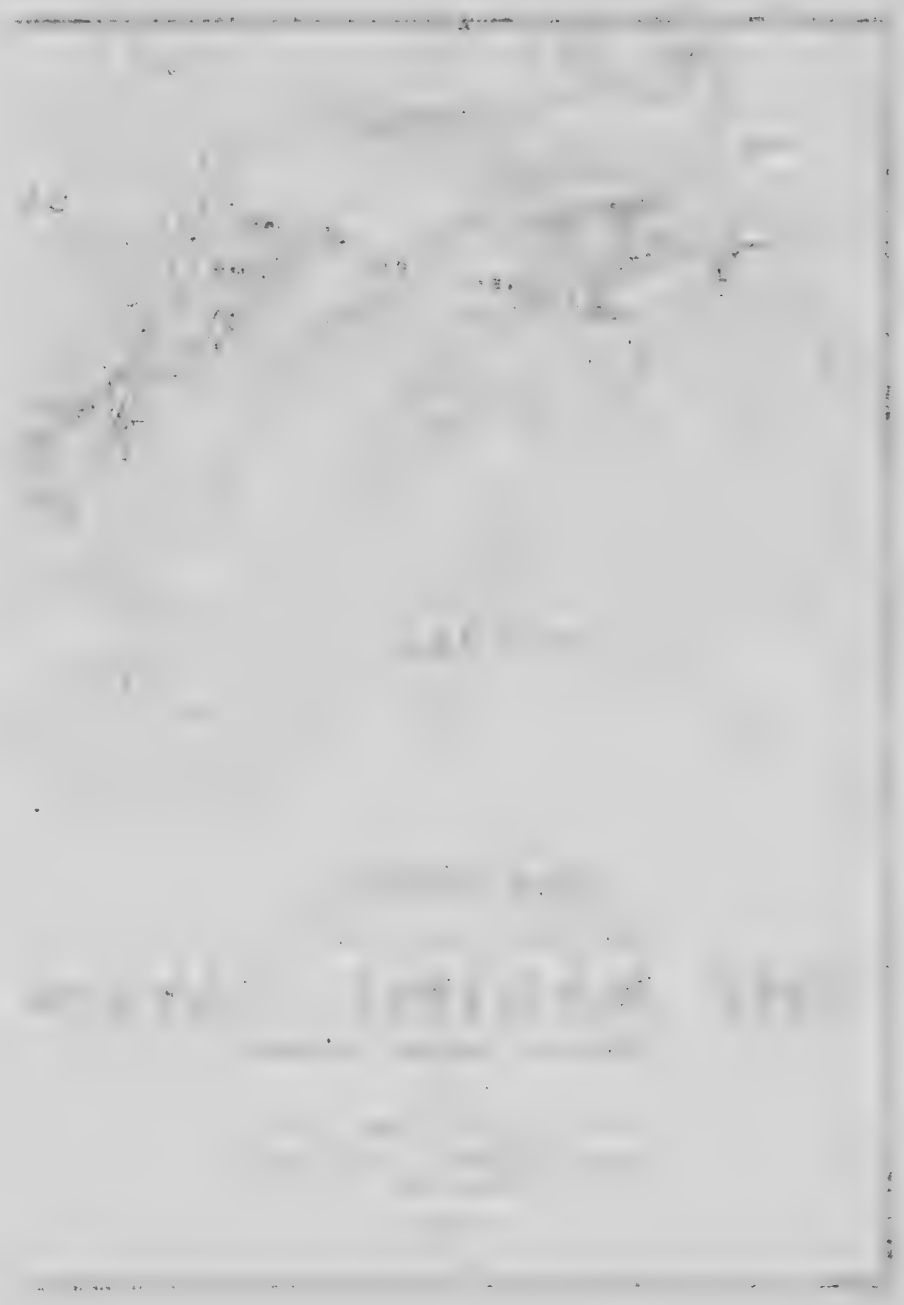


potholes in the making. Other small openings occur where the stream descends in the cloud of spray. Seventy feet further east is a larger opening, which was once its entrance; but as the stream cut deeper in the rock-channel, it utilized a handy crack and gradually carved out sufficient ingress for its full volume.

Thirty feet easterly from the centre of the Flume is another opening to the Mill Bridge Series, called on the map "Entrance No. 1," a mere cleft in the rock wide enough to admit a man's body. The total length of its passageway, at one time accommodating a considerable volume of wat.., is 400 feet. Its height is from 10 to 25 feet, and its width from 3 to 15 feet. It leads to an irregularly shaped chamber, named the Auditorium, of approximately 60 to 70 feet with 20 feet of greatest height. Cougar Brook passes through it and, as it falls 75 feet in the distance of 200 feet from its ingress at Mill Bridge to the Auditorium, the chamber is full of sound and fury. Faint daylight enters through the passageway of the waters, making the place look dim and mysterious. Here the frosts penetrate and in spring stalactites and stalagmites of icicles in columnar groups surround the torrent and extend some distance into the chamber itself. Disintegration has made such havoc that the walls no longer show marks of water-erosion, and the floor is heaped with rock-débris fallen from the ceiling. The connecting passageway, still intact and a good example of erosion, is composed of a series of potholes connected by short corriders. From the entrance, each succeeding pothole is lower, sometimes by 10 or 15 feet. There are rough ladders placed from floor to floor. Most of the potholes here hold water, one to a depth of 4 or 5 feet and so wide that a floating bridge is necessary. When the Caves were first open to the public, all the timber used for construction had to be hewn from the trees and carried on the shoulders over places scarcely accessible to a mountain goat.

A loop in the passageway is called the Corkscrew, from the curiously spiral form of the potholes within it. Across this bend about 12 feet above the main floor, a gallery of pothole formation on a smaller scale extends for 120 feet. Directly under its lower end is a peculiar sharp spike of rock evidently chiselled by water pouring from the gallery. Component rocks show similar erosion.

With the exception of the Auditorium, the floors and ceilings of the Mill Bridge Series are of water-worn rock; and practically no débris has fallen, showing this channel to be of more recent origin. Some of the potholes are incrusted with carbonate of lime in florescent patterns. In places overhead are projecting spurs that have eithe. withstood the erosive power of the waters or else escaped them by some deflection of the current. It is to be remembered that Cougar Brook, deriving its waters from the glaciers and deposits of snows on the peaks enclosing the valley, carries a strong erosive factor in the rock-particles which compose the glacial sediment.

The Gorge Series: From under Mill Bridge, Cougar Brook reissues to flow through an open gorge 80 feet below the floor of the valley and running at right angles to it. The Gorge is 300 feet long, about fifty feet wide, and is spanned by two natural rock-bridges. Its sides are composed of badly shattered limestone. At the lower

Where Cougar Brook first disappears below surface

Upper Cougar Valley

or north end is the opening that leads to the largest and most interesting series of the Caves of Cheops. The Gorge itself is a striking feature of the landscape, and several places are accessible where the visitor may see straight into its depths. The opening is a dome-shaped break in the wall, 30 feet by 30 feet, through which the stream pours furiously down over a confusion of heaped rock, its scattered crystal-spray appearing from below like luminous mist.

At this point is the visitors' ingress called "Entrance No. 3." At the foot of the falls, the channel resumes its normal direction a little south of east. Here it is necessary to cross the stream which flows north descending into lower depths; and from this on the passages are, though moist from the atmosphere, free from water. This first passage from the turn of the channel is a dimly illuminated chamber, 150 feet long, 25 feet wide and grading from 10 to 30 feet high. It is in a bad state of ruin, its floor heaped with débris from ceiling and sides. Its roof is one immense slab of rock sloping with the strata. Through its north-east wall the stream breaks, descending into the blackness with a dull reverberating roar; and fifty feet beyond this the passage turns north again where you must descend rock-face of some twelve feet. On it are natural footholds as if cut with a chisel, but persons unaccustomed to climbing are advised to use a rope to steady the descent. Here the brook is heard far down rushing through some rock-cut with a dull intermittent pounding like the blows of a giant sledge-hammer. Forty feet to the right through a passage about 2 feet high, you creep into the Dropping Cave, so named from the water dropping everywhere from the roof. The floor is composed of rock-fragments and the walls and ceilings of dark blue limestone streaked with white calcite.

At the eastern end of the Dropping Cave is a narrow passage between fallen rock affording squeezing room, 20 feet long, 1½ to 2 feet wide and 3 to 4 feet high. It leads to the Witch's Ball Room, a cavern roughly triangular in shape with sides of about 60 feet and an estimated height of 50 feet. On the floor is an enormous fallen rock with a generally level surface. On all sides except that of the passage are deep cracks choked with rocks but exposing pitch-black holes leading down to where the underground stream roars threateningly. The place is weird and uncanny in the extreme. Goethe had some such vision for the scene of his Witch's Kitchen in "Faust," and it might so have been appropriately named. For Shakespeare's immortal witches uanced upon a desolate heath.

Leaving the Witch's Ballroom, the passage leads south-easterly for 125 feet where the ways part. Its upper end is a vaulted chamber from 15 to 20 feet wide and about 20 feet high, whose floor is composed of broken blocks of crystallized limestone, dark-blue veined with white calcite. Its lower end is between limestone strata from 3 to 7 feet apart with irregular floor of broken boulders and slabs. Both roof and floor are water-worn. They descend until they meet some 20 feet below. The muffled roar of the stream is heard on the left. On the right side of the long passage we have been describing, three separate smaller passages lead to a common goal, two funnel-shaped chambers the farthest one known as the Pit.

It is now necessary to return to the surface and seek ingress through Entrance No. 3, just east of the Gorge and close by Lookout

Upper Cougar Valley

Where Cougar Brook first disappears below surface

Point. This is the first accessible entrance on the trail coming up the valley. The descent is by ladder for 10 or 12 feet to a small cavern with room only for three crouching persons. Off this, a crack barely wide enough to admit the body leads to a narrow chute which, in turn, descending some 20 feet to the "brink of space," can be negotiated by means of a rope. From the final ledge a stone will drop 60 feet and strike the brink of the Pit.

In addition to the three small passages leading to the Pit as described above, is another called the Marbleway from the likeness of its walls to glistening marble. It is a short corrider connecting two larger passages. The Pit is almost 20 feet in diameter and over 20 feet high. Its walls, like those of the Marbleway, are of dark bluish-grey limestone streaked with white calcite, with an effect as of forked lightning on a dead-black background. At the bottom of the Pit is a slab of rock shaped like a tombstone with a distinctly marked cross (x) in its centre. The walls of the Pit-funnel are water-worn, showing how a stream once flowed into it from Entrance No. 3 and carved out the whole chamber.

On our return to where the ways part, the lower and eastern passage is through separated limestone strata from 5 to 10 feet apart and called the Slanting Way, owing to the strata's dip: the upper one called the Subway, from 10 to 15 feet wide and from 2 to 7 feet high, has an arched roof. Both are strewn with fallen rock and difficult to traverse, especially the Subway on account of its low roof. On the east or left side (as you advance) of the Slanting Way are deep cracks in the strata from whose depths comes a loud noise of the subterranean waters. At a place about the middle, the crack expands allowing a descent to the stream's bed below a cavern called the Turbine which itself is reached by a rather difficult passage involving skill in climbing. The Turbine is so called owing to noise from waterspouts resembling sounds made by water falling into the pit of a turbine. Near the south end of the Slanting Way on its left hand side is the interesting pothole named on the map "Curious Pothole." Directly beyond it is the Art Gallery, so called from the florescent designs of overlying carbonate of lime, in color from cream to delicate salmon. Here the incrustation varies in thickness from 2 to 6 inches and the flowering is more beautiful than in other places of similar natural decoration.

Beyond the Art Gallery, the passage continues south-easterly, ever increasing in interest. Within the next 200 feet, it varies in width from 15 to 30 feet and in height from 10 to 15 feet. On the right is a narrow twisted opening named the Gimlet. On the left are two concave sections of ancient potholes leading to unknown depths, one named the Dome from its perfect form. Both are profusely ornamented with florescent incrustation. Among minor passages here, is one leading from the unnamed and southerly pothole to the Judgment Hall.

The Judgment Hall: In this section the subterranean river crosses the corrider some depth below, and its muffled roar is now heard from the right side. A narrow opening, 1½ feet wide, leads for some 15 feet to the Carbonate Grotto which has some fine floral designs. The cavern containing the grotto is about 30 by 60 feet in area and from 10 to 15 high. For the next 130 feet, the passage

varies from 8 feet wide and 5 feet high at the upper end, to 20 feet wide and 20 feet high at the lower end. The sides are hung with rock shelves spotted with the calcium, and the floor is covered with fallen rock. It ends in a *cul-de-sac*. But through a crack on the right, scarcely noticeable in the dark and barely wide enough to admit a human body, you may descend 57 feet and enter the largest cave of all, 200 feet wide and from 40 to 50 feet high. It is called the Judgment Hall, and some conspicuous pillars within, the Pillars of Justice. Blocks broken from roof and sides litter the floor and lie heaped at the north end. The roughly arched roof and the sides rising in parallel ledges, and the heaped rocks are covered with the white calcite and in places beautifully ornamental. From its north end the Judgment Hall connects with the unnamed one of the two ancient potholes.

Near the centre of the western wall, a narrow gap leads to a small chamber named by W. S. Ayres, the White Grotto from the delicacy and beauty of its florescent calcium ornamentations. The passage of which the chamber is a part, is 40 feet long, 15 feet wide and 10 feet high. From the White Grotto a passage leads to the Bridal Chamber also named by Mr. Ayres, from the purity of its lime incrustations and the general beauty of the floral designs. It is a small chamber. Here the passage breaks off in a precipice falling to a deep chasm from which is heard the subterranean stream. It is 240 feet from the Wind Crack and 54 feet above it. The wind issuing from these lateral cracks already described, is probably due to a waterblast caused by the stream falling into the chasm .

Another passage is the Ice Cave situated above the deep entrance from the Gorge and reached directly from the valley. Its largest chamber is named the Temple. The name, Ice Cave, applying to the whole passageway, is on account of ice blocking the entrance the year round. A second set of passageways occur below Goat Falls which pour into them until they are icebound in late October. Their structure is similar to the passages leading to the Auditorium, via a series of connecting potholes, only these are much smaller. Probably the flow from Goat Falls the bulk of whose water passes through these channels, empties into the Turbine.

Looking down Cougar Brook Valley from Pt. Lookout

Exit of Cougar Brook from Mill Bridge

CHAPTER IV.

GOLDEN AND THE COUNTRY OF THE UPPER COLUMBIA.

GOLDEN

Golden, originally the "Golden City," is a little town of nearly 1,000 inhabitants well laid out among the trees at the mouth of the Kicking Horse Valley, 1½ miles from the junction of its river with the great Columbia. It is thus at the frontier of the Upper Columbia Valley. Its altitude is 2,500 feet, the highway of the railway having, since leaving the summit at Stephen (5,329 feet) 45 miles east, dropped 2,769 feet. The chief industry is lumbering, the Columbia River Lumber Company operating large mills there and employing mostly Asiatic labour. There are five churches, two public schools, a high school, a court house, and a weekly paper; also several good stores, a large business being conduted by the member of the B.C. Legislature who carries supplies for sportsmen. Tourists may like to know that camera and Kodak supplies are sold by J. A. Buckham. There are several hotels, the best being the "Columbia" ($3 to $4 a day) and the "Queen's" ($2 to $4 a day.)

Golden has the only hospital on the railway between Banff and Revelstoke. Supported by a provincial grant and private beneficence, it is a well equipped and attractive looking institution set in a ten acre park. The future of the town is bound up with the progress of the Upper Columbia and with the mining developments in the mineralized mountains surrounding it. The completed railway from the Crow's Nest Pass to Golden will mean the beginning of a large and prosperous town. A bridge across the Columbia is greatly needed to connect with the western side of the Columbia Valley and with the numerous trails penetrating the valleys and passes of the Dogtooth and Spillimacheen Mountains. Excellent roads and trails run in all directions, and up the mountains. Ponies may be taken up the nearer mountains for some distance, and the old Indian foot-paths can be followed to the summits. There are no high mountains near the town.

Golden has an asset in its pure dry air and the steady cold of its winters, and is recommended as a place of healing for incipient tuberculosis. Cures have been effected after a few years residence there.

Places of Interest near Golden and Beyond:

Excursions on foot; Hospital Creek Falls, 2 miles; Kicking Horse Canyon, 1 mile; **Phantom Lake,** ½mile; **Race-Course,** ¼ mile; **Junction of the Kicking Horse and Columbia Rivers,** 1 mile.

Points reached by saddle-trail in one day: On the first "bench" of the Rockies, **Hospital Falls** and trail **above Kicking Horse Canyon; Mt. Moberly; Canyon Creek** in the Selkirks across the Columbia, 8 miles by trail.

Short Drives: to Moberly 8 miles north; to Hadden's "Road house," 13 miles south.

Long excursions on the stage road by carriage or motor; to Cranbrook, 180 miles south. "Stopping places" and distances from Golden: Hadden's, 13 miles; Johnson's, 18 miles; McKeeman's, 29 miles; Spillimacheen, 41 miles; Dolan's, 54 miles; Windermere, 82 miles;

Fairmont Springs, 93 miles; Sante's, 106 miles; Wolf Creek, Hanson's, 151 miles; Fort Steele, 160 miles; Cranbrook, 180 miles.

A loop-line for automobiles is made by crossing the bridge at Athalmer to Wilmer, driving to Number 3 Creek, the South Fork of Salmon Arm, Spillimacheen Ferry and Golden, the round journey covering 165 miles. On this excursion, side trips can be made from Wilmer: to Invermere, Paradise Mine, and Mountain Valley Ranch.

Tariff rates for carriage and saddle horses at Livery (A. C. Hamilton)—Carriages, seating two, four or six persons, $1.50, $2.00 and $3.00 per first hour; 50c., $1.00 and $2.00 for every additional hour (without driver for two, with driver for four or six persons). One horse and carriage per day with driver, $6; without $5. Carriages for four persons $8 per day; for six persons $10—in each case with driver.

Excursions by water: for Passenger Steam Klahowya, see the Waterway of the Upper Columbia.

By canoe, rowboat or launch: To Phantom Lake, Cedar Lake and small lakes and channels on either side of the Columbia River; also up the River to the Kootenay. Boats to hire, 15 minutes' walk from town; canoes to rent from J. A. Buckham at $1 a day; launch with engineer from J. Gould for $5 an hour.

Upper Columbia River, Evening

ALONG THE COLUMBIA RIVER BETWEEN GOLDEN AND BEAVERMOUTH ARE SEVERAL POINTS OF INTEREST.

Beavermouth—Name: By the C.P.R. Company with reference to the junction of the Beaver and Columbia Rivers about one and a half miles below the station. Altitude: 2,435 feet. Here is a forsaken village. At one time a lumber mill gave employment to a considerable community. Now decaying cabins and a skeleton mill remain to tell the tale. The big mogul engines used to push the trains up the steep grades of the Beaver River Valley to the summit of Rogers Pass are kept at Beavermouth. The grade is cut along the west side of the valley and climbs nearly 1,000 feet in sixteen miles. To appreciate the difficulties of so remarkable engineering, a position should be taken on the edge of the Prairie Hills bounding the Beaver Valley on the east, from where the road-bed shows a white line against the dark background of the western slopes. With a field-grass as many as twenty bridges can be counted crossing the racing torrents. Some of these bridges are beautiful structures of steel, making one wonder how such slender combinations can support the weight of heavy trains.

At Beavermouth, Quartz Creek from the northern interior of the Dogtooth Mountains joins the Columbia River. It has been pointed out in the monograph on the Dogtooth Mountains, that a trail might be made up Quartz Valley to connect with the Canyon Creek trail from Golden. For many years placer gold mining was carried on not far from the mouth of the stream, but with no great profits. And it may be going on still, but in a very small way.

Blaeberry Crossing—Name: With reference to the Blaeberry River so called from the quantities of huckleberries (*Vaccinium*) found on the slopes of its valley.. Its source is in a glacier lying on the south slope of the Great Divide many miles back in the Rockies north-easterly from its mouth. The glaciers on the opposite side of the Divide are those which supply the headwaters of the Saskatchewan river, and the pass leading over it is the historic Howse Pass, a low one, 4,500 feet in altitude. The Blaeberry River has associations with the old fur-traders and explorers, both the North-West Fur Company and the Hudson's Bay Company making it a highway of trade. The route lay over Howse Pass and down the Blaeberry to the Columbia Valley which it traversed by road or river as far as Beavermouth, there following the great Columbia northward round the Big Bend.

Donald—Name: By the C.P.R. Company. Presumably after Sir Donald A. Smith (now Lord Strathcona and Mt. Royal) a director of the Company. Altitude: 2,580 feet. Location: A "siding" on the railway, twelve miles easterly from Beavermouth on the Columbia River. Donald, once a Divisional Point on the railway and a flourishing village beautiful for its situation between the grey Rockies and the dark Selkirks, is now not only a deserted village but an abandoned site. Except the old station and one or two buildings, the town has been removed piecemeal; and a scene of railway and mining industry has reverted to almost primeval wilderness, its streets overgrown with rank vegetation. It has had its "scenes, its joys, its crimes"—and its characters. Sheriff R———, to wit, was

the peer of Baron Munchausen. He told his tales to humble and eminent alike, with a quaint and whimsical innocence, and his auditors were wont to say that the Sheriff came to believe them himself. They ought to have gone into black and white, and so into the literature of the country. Many of them are still retold, but only the Sheriff could have presented them in dramatic shape to the reading public. A human type of another sort was "Father Pat," a gentle Anglican Cleryman with a roving missionary commission whom navvy and miner worshipped as preacher and man, and whose tragic death occurred many years after in Montreal. No typical town of the far West contained richer material for literature than Donald, but it vanished like many nomadic settlements of the eighties and early nineties.

About one and a half miles west of Donald the railway crosses the Columbia which presently enters one of those picturesque savage gorges peculiar to the mountains. The canyon is long and narrow, confining the river by steep rock-bluffs with many a buttress capped by stately conifers, extending into the torrent and disputing its passage. The railway track follows the curves of the river and provides a delightful excursion on foot.

Redgrave—Name: By the C.P.R. Company, after Sheriff Redgrave of local fame as a modern Munchausen. Altitude: 2,540 feet. Location: A "siding" on the railway, seven miles from Beaver[illegible]h, where the gorge is very narrow, and close to steep overhanging [illegible]s. A watchman is stationed here to guard the track from falling [illegible]. A short distance below are two wildly foaming rapids worth [illegible]. Not far below the second one, the canyon widens out into [illegible] levels as far as Beavermouth, and the river resumes its gentler [illegible].

Smoking Room, Club House

THE UPPER COLUMBIA.

Whittier's familiar couplet might have been written of this mighty river that encompasses the Selkirks and winds the length of its long chain well-nigh 1,400 miles to the sea. Watching its tumultuous yellow waves from the railway train, the traveller may not know that for fully 20 miles from its fountain-head in the Columbia Lake, 100 miles south, its waters are clear as crystal. The Columbia is a famous river in a Province of famous rivers. It is the largest and longest of the great waterways in North America emptying into the Pacific Ocean, half of its sinuous length being in Canada. It drains an area of 298,000 square miles. The tourist who makes the inland voyage, by steamer or canoe, from Golden at its confluence with the Kicking Horse to Windermere, companies with only a small portion of the old River. Nevertheless, this portion which flows through a rich and lovely valley must once have been many miles wide—as wide as the distance between the Selkirks and the Rockies stretching on either side. For you may watch the *River carrying down soil. The grade here is less than a foot to a mile, and its continuous abrupt winding for 40 miles and more south gives the voyager an impression of sailing over a long series of lagoons. In places the valley is 10 miles wide, and its fine white soil is exceedingly rich, requiring only water to produce anything that will grow in the temperate zone.

Although there is an excellent picturesque road that often rises to skirt the foothills, the happiest way of travel to the Windermere is by the River. The passenger boat, Klahowya, leaves Golden, during the summer, at 7 a.m. on Tuesday, Thursday and Saturday. The summer weather is always clear and sunny, once you are well within the southern reaches of the valley. Then, ever on the west side, the richly wooded ranges of the Selkirks softly fold and unfold; ever on the east, the treeless upper parts of the Rockies take on in strong sunshine, indescribable hues, between crystal and pale sapphire. No definite words, compact of colour, as rose or purple. can give any concrete and accurate idea of their appearance on a bright morning of sunlight. Under a sky of deep cerulean blue, the sun seems to touch the rock with the transparency of a faint blue gem. In the afternoon and evening, their colours are definite rose and violet, all their sharp configuration softening as the day wanes. while the recesses of the Selkirks fill with an intense and melancholy blue.

Very few of the peaks are named and those named are not likely submitted to the Geographic Board. Mt. Manitoba, named for his own province by Sir John Schultz. stands up conspicuously in the Rockies; and, in the Selkirks, Mt. Ethelbert, named by Captain Armstrong for the first nun to ascent the River. She died on board the Captain's boat, Ptarmigan, and was buried as Sister Ethelbert. The Government map marks a mountain in the Selkirks about forty miles from Golden by the River, as Jubilee Mountain, probably named in the year of Queen Victoria's Diamond Jubilee.

The valley itself is now lowland, colloquially "riverbottom" covered with low-growing shrubbery and deciduous trees; and now high "benches" studded with large firs, naturally terraced parks-

* Note- No river in the world is more worthy the capital.

receding to the base of the mountains. Occasionally a farm slopes to the River's margin, but mostly the cultivated farms lie unseen from the steamer. On a bench 150 feet high that borders the River, is a flagstaff erected by a farmer who first unfurled the Union Jack for the victory of Mafeking. It is one of the River's landmarks.

This part of the great River is now a comparatively idle waterway, but in a few years it will not be so, though its craft will be employed in pleasure rather than in pure commerce. For the speedier railway, soon to connect the Kicking Horse and Crow's Nest Passes, will carry the ore and the cattle and all the merchandise of trade created by a people who will live in comfort or wealth and die in the valley. Though the bottles of heaven are stopped for two months and more in summer, irrigation will make the dry benches and intervals "rejoice and blossom as the rose." An occasional motor-boat is now seen where fleets of this modern pleasure craft will soon be familiar. And always as hitherto the River will be the happy waterway of the canoeist.

It is from glacial Toby Creek just below the Lake called Windermere that the River receives its first soiling. Windermere is as limped water as flows in Canada, and shallow along its margin making safe and excellent bathing. No one has yet been drowned in its waters.

Canterbury Point on the western shore of the Lake whose name is now changed to Invermere, has been often pointed out as the sight of Thompson's Fort (1807-11), there being wooden ruins attesting some old habitation. But Thompson's Fort called "Kootenae House" was undoubtedly situated north of Toby Creek near its mouth where it is marked on his remarkable map made two years later. The warehouse, says Thompson's biographer, was built on the low land by the Columbia River and the dwelling house was farther back on the higher terrace. This would settle any controversy. Elsewhere in this book reference has been made to Thompson's associations with the Columbia River and how he happened to paddle south to its source. His biography—now in preparation by Mr. J. B. Tyrrell for the Champlain Society—will be a distinct gain to Canadian History and a long-delayed appreciation of the greatest geographer Canada has ever known.

Thus, before 1807, the history of the Upper Columbia and Kootenay regions belongs to the Indian; and comes down in legends of intertribal wars. A great battle fought centuries ago between the Kootenays and the Blackfeet is recorded in aboriginal hieroglyphics of red pigment on an outstanding rock near the shore of the Columbia Lake, twenty miles south of Thompson's fort. An ancient footpath, the Spirit Trail of the Indians, leads beyond this and kindred pictured rocks, three miles away Near the trail are mounds built up of leaf mould and twigs, altars where to this day, the Indian passing along, lays a tiny branch, his offering to the Great Spirit, And he would be an unwise and unworthy christian who tried to dissuade him from the reverent and truly religious custom.

From 1807 to 1811, the year of Thompson's last visit, the white man lightly touches the history of this country. It reverts to the Indian again until 1864 when Dr. Toby came, and gave his name to the wild canyon whose repute has travelled far. After Dr. Toby

.ame miners, whiskey pedlars, the N. W. Mounted Police and a few ranchers. Windermere was built on a terrace overlooking the lake, for many years the considerable village of the district and a stopping-place for travel between Golden and Cranbrook. Thirteen miles south at Fairmont was Brewer's, the most comfortable wayside inn of the Upper Columbia Valley which in time came to be called by some who lived in it, the "Happy Valley." Behind Brewer's, a hot sulphur spring was and is to this day used gratis by travellers.

The Upper Columbia is literally a "Happy Valley;" rich agriculture along the River, angling in the creeks, shooting in the foothills, mining in the mountain-sides and mountaineering among the glaciers over the summits. Could diversity further go? The only limitation and nuisance to visitors there is the white dust which in summer drought rises from its roads with every puff of wind and every step of man and beast. But dwellers there and lovers of that fascinating country are gaily impervious to its discomfort. Besides, it is absolutely free from microbes. It is rare to die in the "Happy Valley," save from old age or accident. Obviously there is no dust to speak of in the upper parts of the tributary valleys.

Once the railway is completed that unites the Kicking Horse Pass and the Crow's Nest Pass, the country will be settled by an agrarian population. Some 45,000 acres are owned by the Columbia Valley Irrigated Fruit Lands Company which is also a colonizing company selling its lands direct to the settler. This company has expended large sums in irrigation canals and is the first colonizing agency in the upper country of the great River. An International movement is now on foot looking to commercial navigation from its source to the confluence with the Pacific Ocean. Indeed, this was the dream of those who carried on trade between Montana and the Columbia Valley in the latter part of the last century, transportation being by pack-train on land and by canoe or boat on the Kootenay and Columbia Rivers. It is here that the geographical phenomenon occurs of the Kootenay flowing south and parallel to the Columbia flowing north. So close do the two rivers come in one place that a canal scarcely a mile long was once built connecting them, with the object of making a short commercial watercourse across the International Boundary. But for some reason it was shortly abandoned.

There is a trail around the Upper Columbia Lake which is 10 miles long and lies in the midst of park-land characteristic of the valley. But you may ride at random through the trees after leaving the main road. Any knowing reliable pony will carry you over the "benches" to the high margin of Columbia Lake.

Who would not like to read the record of Thompson's emotions when he saw this lake, and knew he had found the source of the River? Did he then realize the length and great turnings of the mighty waterway whose first white companion he was from its fountain-head to its confluence with the ocean? If you read the history of the River and company with it by sun and stars for scarcely one hundred miles, you have strange feelings not unmingled with wonder and melancholy, when you come to its source. Dwellers in the Happy Valley strike their roots deep and love their River and Mountains as they love the flag.

Tributaries to the Columbia.

Among the streams tributary to the Columbia River between Golden and Columbia Lake and having their sources in the Selkirks, counting north and south, are: Canyon Creek, Spillimacheen River, Bugaboo Creek, Salmon River, No. 3 Creek, No. 2 Creek, Horse Thief Creek, Toby Creek, and Dutch Creek. The next creek south is Findlay Creek always associated with the Upper Columbia; the upper part of its valley lies west of Columbia Lake, but its confluence is with the Kootenay River below "Canal Flats."

Notable streams flowing from the Rockies are Vermillion and Sinclair Creeks.

Athalmer is a village on the western side of the Columbia near its confluence with Toby Creek and where it leaves Lake Windermere The population is about 100. There is a livery, a hotel and two stores. On the western shore of the northern extremity of the lake, Captain Armstrong's houseboat, the Isabel, is moored for the summer months and accommodates some twenty guests; rates $2.50 and $3.00 per day. Rowboats, canoes, carriage and saddle horses can be obtained at regular rates. A telephone connects with Mountain Valley Ranch on Dutch Creek.

Carbonate Landing—Name: With reference to mines in the vicinity. Location: A steamboat landing on the Columbia River some 20 miles south-easterly from Golden where considerable ore was once shipped from the mines. Practically no ore is taken out now. This landing is chiefly important as an ingress to a miner's trail leading across the south-east extremity of the Dogtooth Mountains to another trail up the North Branch of the Spillimacheen River giving access to mining properties at the head of the valley and at the head of the tributary valley to McMurdo Creek. It is a thoroughly alpine route and would make a splendid summer outing, with ponies to carry the camp "outfit."

Route: Take the steamer from Golden to Carbonate Landing; follow the trail to the head of the North Branch of the Spillimacheen and descend the West Branch of Grizzly Creek, and follow on to Bear Creek Station at the mouth of Rogers Pass, or else cross Bald Mountain and follow the Beaver Valley trail to the same point.

Columbia Lake is 20 miles south of Lake Windermere. Both were called the Kootenae Lakes by their discoverer. About halfway between them is a small body of water named Mud Lake. Just south of Columbia Lake is the old canal uniting its waters with the Kootenay River, fallen into disuse shortly after its construction. The vicinity is called Canal Flats. Columbia Lake is 9 or 10 miles long. From the high "bench" studded with great firs abutting its northern margin, the appearance of this beautiful water is as of an arm of the sea sweeping around a wooded cape. Herds of cattle graze on the dry though nourishing "bench-grass" on the surrounding benches. Horses can be ridden anywhere through the trees. The Government map shows a road extending around the lake. There is a picturesque bridle-path, probably an old Indian trail, along the eastern shore. The place is of extreme natural and archaeological interest. Here are the aboriginal hieroglyphics indelibly marked on the faces of precipitous rocks awaiting interpretation by the archaeol-

ogist. Fairmont is the nearest base for an excursion to Columbia Lake.

Dutch Creek is the most southerly of the more important valleys running up into the hills from the Columbia. It is given over to the rancher, the hunter and the angler. A well-known horse-ranch, owned and operated by Captain Thorold, is situated some eight miles from the road leading up the valley, half this distance having a waggon-road and the remainder a bridle trail, thus keeping intact a certain romantic remoteness. Dutch Creek runs through one of the best deer forests in that upper country and provides excellent fishing in season.

Fairmont: North of Windermere, the best known spot on the Rocky Mountains side of the Columbia is Fairmont Hotel Springs, long known locally and to the world outside as Brewer's Stopping-Place, a wayside inn where the traveller was served in homely fashion and with the old-fashioned sense of obligation. Many a motley group has foregathered around the long supper table in Brewer's hospitable kitchen. Right by the door a clear cold pebbly stream runs singing from the mountains. Half a mile by trail up the mountain-side is the hot sulphur spring where baths may be had for the mere taking. A primitive shelter of spruce branches is over the pool protecting the bather. The inn has changed hands and is now owned by a young Englishman who has accommodation for a limited number of guests at $2.00 a day. Persons seeking accommodation for a week or more should write to Mr. A. Hankey, Fairmont, B.C.

Fairmont is 40 miles by the road from Fort Steele south, and 13 miles from Windermere north—in the dry season 13 dusty miles—through picturesque farming lands. The inn, a commodious log house, is situated in a fair ground, the fairest in all the main valley of the Upper Columbia. It is likely to develop into a "Hydro" for the baths. Here is an ideal situation for the country seat of a nobleman with an agrarian tenantry, with house-parties for the hunting and fishing. In the recesses of the Rockies immediately behind the house are the deer and the goat and the big-horn and the grouse; and the Selkirks with more game are across the river. The fish are in nearly all the streams. Everywhere, in the valley and on the edge of the foothills, there is grazing for the cattle. Here too, the nearer mountains rise more abruptly and to a higher altitude, providing first-rate rock-climbing for one-day's outing. Some of the peaks are, at a venture, placed at 10,000 feet.

Findlay Creek figures conspicuously in the eighties for its mining properties. About that time an English lady, who afterwards put her experiences in a book, "Impressions of a Tenderfoot," spent some time there in a cabin with a companion while her husband was shooting in the neighbourhood. Going up the Columbia she was the only lady among the group of miners, prospectors and surveyors on the steamer. She tells how four men each had washed out $14,000 worth of gold in three months; and how another made $250,000 in seven weeks and proceeded to San Francisco to dissipate it as speedily as possible. Now, as then, there is good fishing in the creek; now, as then, deer are running in the forests; but the mining places are given over mainly to horse-ranching. Findlay Creek got its name from

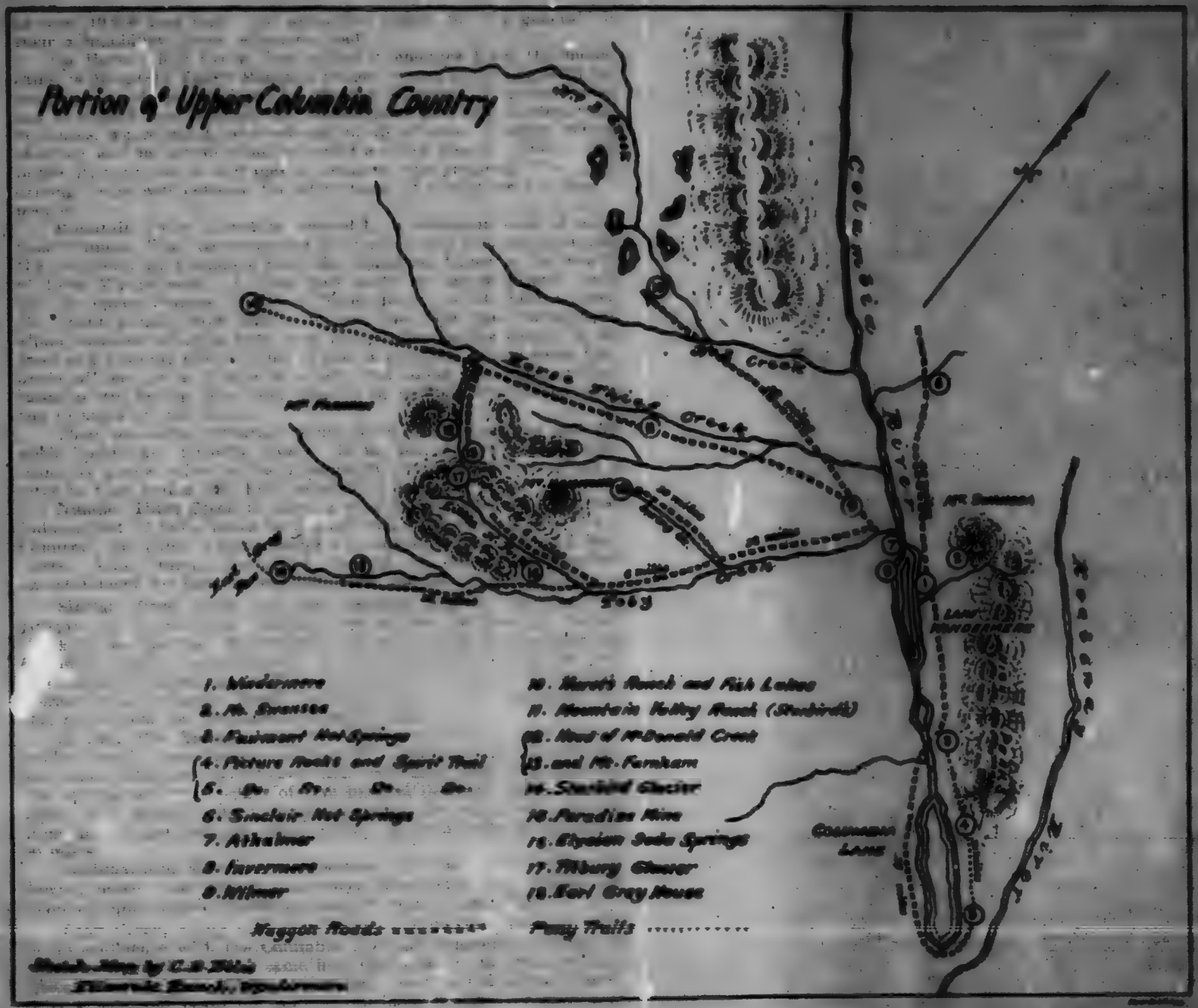
a Scottish "free-trader" who once lived in the neighbourhood and gathered furs for barter with the big Fur Companies.

Mt. Hammond received its present name in honour of a Mr. Hammond, of Toronto. It is doubtless the high mountain named Mt. Nelson by Thompson the first white man to see it. The altitude by aneroid barometer is given as 12,125 feet. From the ridge above Paradise Mine, it is seen an isolated mountain with precipitous sides, a small hanging glacier, and a split summit.

First ascent: By C. D. Ellis a rancher in the hills, in September, 1910. The first attempt was made by Professor H. C. Parker, of New York, in 1909. Mr. E. W. Harnden, of Boston, climbed with Ellis to an altitude of 11,000 feet when they discovered they had taken a wrong route. Not being in proper climbing fettle, Mr. Harnden reluctantly relinquished the virgin summit to his companion. An account of the climb, which was made from a camp at Paradise Mine, appeared in "The Mountaineer" (Seattle) November, 1910. No actual "times" are given. From this point (11,000) we may follow Mr. Harnden's account as published: "Taking a course a little west of north, Ellis continued until he found himself overlooking Boulder Creek (a tributary of Horse Thief Creek) and immediately under the crown of the summit at an elevation of 12,000 feet. Here a bastion of hard limestone blocked the ascent. Following east and south for some 50 feet, he came to a fissure which proved impossible on account of ice and water and a huge wedged-in rock; then to a dry fissure impossible for its smoothness; and finally to one of rotten rock but with footholds and handholds, by which he gained the top about the middle of the afternoon, where he built a cairn and deposited his record." The party left camp early in the morning and returned late at night. It was a difficult and dangerous climb and may be counted the inauguration of the sport in the Windermere region where Swiss guides will doubtless be stationed ere long.

The double summit of Mt. Hammond, of which the southern is the highest by a few feet, is owing to disintegration and the whole crown would have fallen away long ago but for the solid limestone bastion mentioned. The crown is covered with fragments of "green lime shale tinged with red iron stain."

Horse Thief Creek: Its name is suggestive of the lawless days before the coming of the Royal North-West Mounted Police, those Red Riders that established British law and order in the West. If this unbeautiful name is to remain, we wish it were in the Indian synonym. Horse Thief Creek flows north of Toby Creek and between them is that group of glacier-bearing mountains mostly unnamed of which Mt. Hammond is one. The Creek rises far back in the mountains in Starbird Glacier named for its discoverer. This glacier, which has an interesting medial moraine, offers attractions in glacier research to the geologist. About midway up the valley McDonald Creek flows from its source in McDonald Glacier at 7,500 of altitude where are silver mines to which a waggon-road runs. Hard by stands Mt. Farnham, a giant of some possible 12,000 feet. The glacier joins the Tilbury Glacier at the head of the Little North Fork of Toby Creek. Here is exercise on both ice and rock for those seeking new peaks and passes to conquer. The col itself is said to


Portion of Upper Columbia Country
Columbia River
Toby Creek
Forest Trail Creek
Mt Nelson
Mt Sir Donald
Mt Dawson
Lake Windermere
Kootenay R.
Columbia R.
Canoe Lake
1. Windermere
2. Mt. Swansea
3. Pleasant Hot Springs
4. Picture Rocks and Spirit Trail
5. do. do. do. do.
6. Sinclair Hot Springs
7. Athalmer
8. Invermere
9. Milner
10. North Ranch and Fish Lakes
11. Mountain Valley Ranch (Shuswap)
12. Head of McDonald Creek
13. and Mt. Farnham
14. Starbird Glacier
15. Paradise Mine
16. Elysian Soda Springs
17. Tilbury Glacier
18. Earl Grey House
Nuggett Roads
Pony Trails

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be over 10,000 feet high. An attractive aspect to "the general" is their accessibility by an excellent road.

On Horse Thief Creek, just where it emerges from the mountains, is **Mountain Valley Ranch,** a holiday resort in keeping with the country, owned and managed by Thomas Starbird. The farm-house has developed into a large and comfortable inn with modern conveniences, where guests are welcome in all seasons. Fishing, riding, shooting and mountain climbing are the chief sports. Guests who prefer it, may live in cottages or tents on the premises. The good driving roads will enhance the attractions of this place for elderly people.

Mountain Valley Ranch is reached by a mountain road 13 miles from Wilmer. Tourists travelling by steamer may communicate with the proprietor by telephone from the houseboat Isabel at the mouth of Lake Windermere. A wide trail made by the proprietor leads by the upper reaches of Horse Thief River to Starbird Glacier. For about a mile from the ice-tongue, the river runs through an alpine meadow which is both park and garden for the beauty of its trees and flowers; then it plunges over a precipice falling some hundreds of feet in a typical cataract. All along the upper valley, cascades are falling from high sources in cliff-glaciers unseen from the 10 miles of trail below.

There are other tributary glens north where ranching and the noble sports are friendly rivals. It is, too, a country of lakes, which is a new story in the topography of the Selkirks. From a peak in that region Mr. Ellis counted 27 lakes.

Number Three Creek is called a good fishing place with its Fish Lakes about 12 miles north by a good road from Wilmer. In "No. 3 Country" the game warden found a colony of beaver of some hundreds. John Hurst, the oldest resident on the creek, provides entertainment for hunters and fishermen, and is a reliable guide.

Sinclair Pass, Falls, and **Hot Springs,** may be mentioned as germane to the Selkirks. Sinclair Pass is near the head of Sinclair Creek in the Rockies. It is the lowest pass (4,662 ft.) between the Columbia and Kootenay Rivers. A trail leads up and over the pass and across the Kootenay to White Man's Pass below Mt. Assiniboine, a branch trail leading to Banff. A motor road is now being built over this route from the Windermere road to Banff.

Sinclair Hot Springs have not been exploited for the general public; but for years miners and settlers suffering from rheumatism and other afflictions have found their medicinal properties effectual. The springs are near ledges of rich mineral deposits, oxide of iron, copper and galena—ledges extending along the range and showing from the steamer, red and yellow stains on the mountains for nearly 50 miles.

Spillimacheen River: An important tributary of the Columbia flowing down from the Spillimacheen Mountains and joining the River at Spillimacheen Landing some 40 miles from Golden.

Toby Creek, rising in Toby Glacier and flowing some 40 miles to its confluence with the Columbia River at Athalmer, received its name from Dr. Toby, who came into that country in 1864, the first white man to follow Thompson, though over half a century later. It is a wild and beautiful canyon, the most famous for beauty of

forest and stream and white alpine landscape among the southern tributaries of the Columbia. This valley, too, has had its scenes of prospecting and mining and is rich in minerals; but all mining activities have ceased, awaiting the branch railway for the transportation of ore. One desperate scene is now impressed upon a mountain side where a large tract of the dark, softly even, luxuriant forest is blasted from the upper tree-line to the rocky margin of the beautiful little river below; where every serried trunk stands summit behind summit black and naked and dead. It marks the rage of a disappointed prospector whose only regret was that the fire stopped and that he "had not burnt the whole —— valley to ——" (these are words with which the mountain-pilgrim has no concern). When civilization advances sufficiently, we shall electrocute such criminals. This is the only blight on that richly beautiful alpine valley, a valley that Wordsworth, and Coleridge and Shelley and all the poets of mountain-landscape had rejoiced to see; and seeing, had rendered into song.

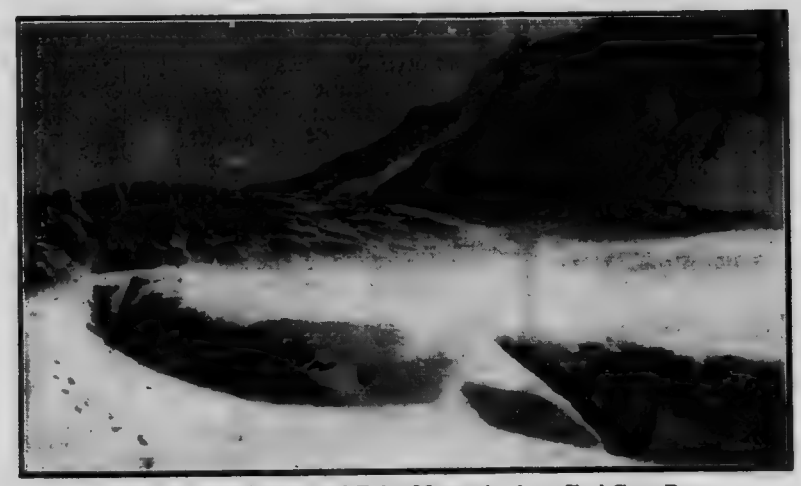
There is a good driving-road for 30 miles to Earl Grey's camp whence a saddle-trail leads across Earl Grey Pass (7,500 feet) to Hamil Creek and down towards the Kootenay Valley. At the head of Toby Creek Valley the visitor is in a truly alpine country. Toby Glacier itself is worthy the Selkirks as the accompanying illustrations show.

Mr. E. W. Harnden, to whose courtesy the illustrations are owing, compares the view from Earl Grey Pass to the "Monte Rosa-Lyksamm-Breithorn view from the Gorner Grat, and of the Jungfrau group from the Scheidegg. To the east is the broad expanse of the Toby Glacier, to the south-east the towering peaks from which the glacier sweeps, and to the south one of the noblest mountains bearing some of the most beautiful and pure glaciers that I have ever seen." And this strategic place for mountaineering is, we are to note, very comfortable of access. Scarcely any of the mountains are named. Two minor peaks overlooking His Excellency's camp were named by Earl Grey "The Pharaohs" from a fancied resemblance. Toby Glacier is one of a number of the larger glaciers in the vicinity, and the immediate mountains unmeasured and unnamed are lofty ice-clad peaks estimated tentatively to be over 11,000 feet of altitude. The séracs of Toby Glacier here illustrated show its importance as an ice-river.

Toby Creek has two important tributaries: Spring Creek, and Little North Fork which in turn has its own tributary, Delphine Creek.

Spring Creek: Following the road up Toby Creek, at the 12-mile post is a clearing with a cluster of frame cottages and log cabins called Pinehurst, just where Spring Creek empties into Toby Creek. The buildings, once occupied by persons connected with Paradise Mine and now vacant, would comfortably shelter a number of families seeking holidays and health. The dark evergreen forest is all about, yet there is ample open space and breadth of sky and a view of the high glaciers beyond; the wild torrent is just below and across the canyon the wooded mountain rises steeply. The only blemish on this lovely wilderness is the burnt tract described under Toby Creek.

Starbird Glacier (note its medial moraine)



View of Toby Glacier and Toby Mountain, from Earl Grey Pass

Here at Pinehurst the road branches, ascending the tributary valley to Paradise Mine 8,000 feet above sea. In letters though perhaps not in science, you might call it a hanging valley of lavish living forests and flowers. A lonely glen high in the depression of high hills, the road, wide enough for motors to pass, climbs for 10 miles with changing views of distant mountains at its every sharp curve or round corner. There is no dust; and it leads to the edge of a turfy meadow where the brave larches grow—the most lovable of all beautiful trees growing in high altitudes—and where lie snowbanks that are the fountain-head of Spring Creek. A ridge, perhaps 1,000 feet above the meadows, commands an outlook far-reaching—a confusion of glaciers and rock-summits, every grey peak in strong sunlight transmuted to faint sapphire among the white, white snows. It is quite true that the secret and most potent charm of mountaineering lies in the sights to be seen as one climbs from height to height. Knowing ones can from this ridge discern Mts. Assiniboine, Temple, Lefroy, Goodsir and many a separate peak in the Rockies; and, in the nearer Selkirks, Mts. Dawson, Sir Donald and others of the well-climbed districts. Immediately opposite the ridge stands Mt. Hammond first climbed by Mr. C. D. Ellis in 1910. This is no doubt the high mountain which Thompson named Nelson, the outstanding summit in its vicinity.

Little North Fork: Six miles beyond Pinehurst at the 18-mile post, Toby Creek receives this creek six miles long, which has a good driving road. A bridle-trail leads up its tributary, Delphine Creek, to its source in Tilbury Glacier over 9,000 feet above sea. Tilbury is the only glacier named among seven flowing from mountains which form a fine cirque at the head of Little North Fork Valley. There are altogether eight conspicuous peaks in the range which is shaped like a horseshoe. The appellation to suit is obvious, a nail for each peak. In this valley are the "Elysian Soda Springs" which prophesy a flourishing Hydropathic when the fame of the country spreads abroad.

Wilmer is a village back on the park-land, by road 2 miles from the steam-boat landing. It is north of Lake Windermere, the first of the three villages to be reached on the voyage up the River; and is the headquarters of the Columbia Irrigation Company. Its population is about 100 persons. Wilmer was founded by Mr. R. R. Bruce as a base for supplies for Paradise Mine on the mountain at the head of Spring Creek, 22 miles away by an excellent road. It is a centre for excursions The site of the North-West Fur Company's Fort built by David Thompson in 1807 near the mouth of Toby Creek, is about 1¼ miles from Wilmer. The excursions to the head of Toby Creek Canyon, to Paradise Mine near the base of Mt. Hammond, to Ptarmigan Mine opposite Mt. Farnham, to the Fish Lakes in Number 3 Creek, and to Mountain Valley Ranch up Horse Thief Creek are among the excursions best made from Wilmer. A shallow lake about 1½ miles long contiguous to the village will provide boating in summer, and skating, hockey and curling in winter.

About 4 miles from Wilmer on the Toby Creek road are two pretty green lakes set in tenuous forest of darker green, with thickly wooded hills behind rolling upward to mountains culminating in a high grey cone with white patches near the summit. The peak

is Mt. Hammond many miles away, and the largest of the two lakes was once known locally as Toby Lake.

Windermere is a scattered village built on the eastern terraces of the Lake, and was once the only settlement between Golden and Cranbrook. It is the centre of a considerable ranching district running along the foothills of the Rockies. About four miles back, two miles of road and two of trail, stands Mt. Swansea, said to rise 3,000 ft. above the valley, commanding a wide view including 30 miles of the Columbia River. The village is half a mile from the steamboat landing. Where there is irrigation on the natural terrace, fruit trees are flourishing and the grass grows as radiantly green as in the humid atmosphere of the coast. One little nest of a place in the hollow of the terrace shows what wonders water will do in that arid-looking land. A small ditch makes a ribbon of green across the common. The water is taken from Windermere Creek, a stream supplying the little canals in various ranches on that side of the lake.

The village has two churches, a hotel, a livery and a store which keeps a stock of campers' supplies. The population is about 100, and if the ranching district of 10 miles extent is included, it reaches considerably over 300 (1911). Windermere Lake was named Kootenae Lake by David Thompson who discovered it in 1807. The origin of its present name is obvious. Windermere, in the geography of the English Lakes, is the Lake as the root of the word implies (mere: a lake, a sea); but in the nomenclature of the Upper Columbia, the added "Lake" is not considered a redundancy. Therefore, we follow the custom of the country.

An expansion of the Columbia 80 miles from Golden, Windermere is a lovely low-lying lake about 8 miles long and of irregular width—in places one and a half miles. Its greatest depth is 16 feet, and its average not more than 8 feet. The water is limped and the bottom sandy. In winter the ice is clear and hard and easily swept for curling, making a curler's paradise in the open. To be alive on Lake Windermere in the winter is a curler's very heaven—or a skater's. When the hundred persons living in the village were dependent in winter upon the stage coach for communication with the outside world reachable by railway north at Golden or south at Cranbrook, much was made of the lake during the frost-bound months. Skiing, too, is a sport in the vicinity. The place has all the natural resources of winter sports for a fashionable resort, including winter-climbing, snowshoeing and tobogganing. But this is to look into the future.

Invermere: Old Canterbury point, surveyed for a townsite in 1899, has been acquired by the Columbia Valley Irrigation Fruit Lands Company and renamed Invermere. A hotel has been built with ample accommodation for the tourist travel, and is now open to the public. The whole point which runs southward into the lake on the Selkirks side, has been divided into spacious lots to be sold directly to persons proposing to erect country residences. The lots vary in size from a ¼ to 1½ acres. The British Columbia Club of New York has purchased land near by for a club house.

TRAVEL BY WATERWAY ON THE UPPER COLUMBIA.

The Steamer "Klahowya," leaves Golden at 7 a.m. on Tuesday, Thursday and Saturday, arriving at Wilmer and Athalmer the same night. Returning the following days, the steamer leaves Windermere at 7 a.m. Wednesday, Friday and Sunday, reaching Golden about 3 p.m. Landings are made convenient to Wilmer, Athalmer, Invermere, Windermere. At Wilmer Landing, a conveyance is waiting for passengers. The time-table is arranged to give passengers the benefit of daylight for the fine scenery of the route. Single fare $5.00; round trip, $7,50. Meals, 50c. A specialty is made of good, plain cooking with butter, eggs, milk, fruit and vegetables obtained from farmers along the route. The steamer will accommodate 75 persons only. Intending visitors are advised to secure their passage in advance by letter or telegram to Captain F. P. Armstrong, Manager of the Upper Columbia Transportation Co., Golden, B.C.

The Company has also a freight steamer, Nowitka, which makes two trips a week, leaving Golden Sunday and Wednesday at 7 a.m.

An excursion of unusual charm on the Upper Columbia River is one by canoe from Golden through to the Kootenay River, South of Columbia Lake, returning by the Arrow Lakes to Revelstoke. Owing to the low grade and even flow of the Columbia south of Golden, it is especially adapted to canoeing and to sailing by motor boat. Canoes can be rented in Golden for $1.00 per day from J. A. Buckham; a launch from J. Gould, at $5 per hour, engineer included. Doubtless a much lower rate may be obtained for long trips. Mr. H. E. Forster, whose beautiful home, Firlands, is one of the agricultural sights of the valley back on the "benches" some 8 miles from the River, has fitted up a motor-boat for carrying freight.

Roads and Trails of the Upper Columbia Valley.

Reference has been made to the roads leading into the mountains. A main road runs from Golden on the east side of the River passing beyond Columbia Lake towards Cranbrook on the Crow's Nest Pass Railway, a distance of nearly 180 miles. Another runs from Spillimacheen to Dutch Creek on the west side; also, branch roads lead up Horse Thief Creek, Toby Creek, Dutch Creek, with shorter roads tributary to these. All the roads leading into the mountains are recommended for motoring. They lead to high altitudes at timber line and were mostly built for the mines, notably the road up Toby and Spring Creeks to Paradise Mine (8,000 feet) near Mt. Hammond; and the road up Horse Thief and Macdonald Creeks to Ptarmigan Mine (7,500 feet) at the base of Mt. Farnham. There are many trails following hard by the roads and branching from them to zigzag upward above timber-line among some interesting and noble mountains. These trails lead over the passes down into the Kootenay Valley. On the benches of the Columbia Valley itself, one can ride anywhere among the beautiful shapely living firs. It is rare to find a lifeless tree standing.

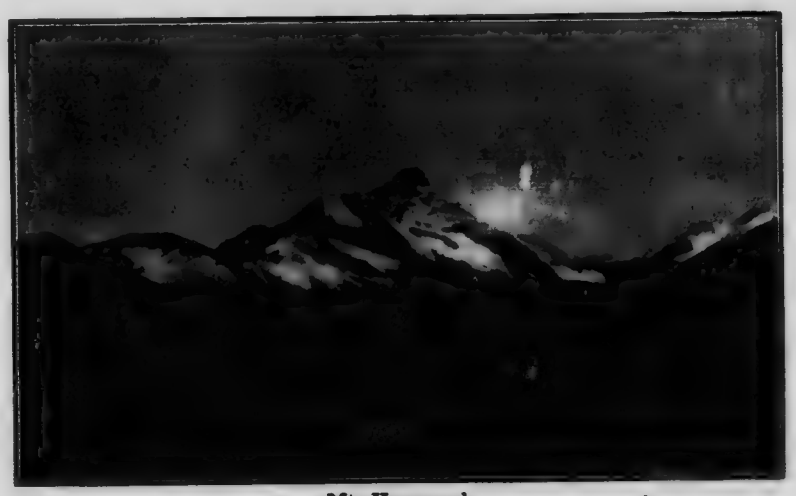
Liveries, Outfitters, and Sportsman's Guides.

The tariffs average the same at all places from Golden to Windermere. Automobiles may be engaged with chauffeur at either Cranbrook or Golden for $50 per day. Waggons with driver and "team"

of horses cost $8.00 or $10.00 per day; saddle horses from $1 to $2; packhorses $1; packers and guides from $3 to $4 per day. Manuel Dainard, sportsman's guide and outfitter, of Golden, who has had considerable experience, makes a flat rate of $15 a day for one huntsman or $12.50 for two or more, the figures including everything in the expedition. Guides and "outfits" may be obtained at points on either side of the River.

T. R. Hadden (McMurdo, P.O.) keeps a "Road House" or stopping place, 13 miles from Golden, with five guest rooms. Outfitting: 3 saddle horses, 8 pack horses, two packers and two guides. Game in the vicinity: duck, goose, grouse, deer. Game on Manitoba Mt. 4 miles off: goat, bear, bighorn (sheep); on Prairie Mt., 36 miles off: bear, deer, caribou.

John Hurst, an old-timer in Number 3 Creek Valley is recommended as an excellent guide and outfitter; also J. Barbour, of Toby Creek. Thomas Starbird, proprietor of Mountain Valley Ranch on Dutch Creek, provides "outfits" and guides for persons staying at his resort. Also, there are recommended J. Tenasse, P. McIvor, W. W. Taynton and J. A. Taggart in the Wilmer region. H. G. Low (address Galena) keeps saddle horses, packhorses, guides and packers rented at the usual rates. In his constituency there are bear, goat, sheep (bighorn), moose, deer, grouse, geese, duck, and good trout-fishing; each sport in its season. Galena is about 45 miles south from Golden by the River. Another outfitter is named Barrow. These names are mentioned in the hope that they may be some guide to sportsmen looking for horses and men in the Columbia Valley. It is advised that all sportsmen and campers bring their own bedding.



Mt. Hammond

CHAPTER V.

THE DOGTOOTH MOUNTAINS.

From a sketch by A. O. Wheeler.

The geography of the Dogtooth Mountains is doubtful. As yet they do not appear to have been definitely assigned to any of the established mountain systems, but seem to be an outlying group by themselves. On his Reconnaissance Map of "a portion of the Rocky Mountains" published in 1888, Dr. Dawson embodies them in the Selkirk Range. But the latest Dominion Government maps do not use the word "range" in connection with the Selkirks. According to such maps the Selkirk Mountains occupy the entire country enclosed by the great loops of the Columbia and Kootenay Rivers; while the Dogtooth Mountains, Spillimacheen Mountains, and Shuswap Mountains are minor groups of the same system.

The north-eastern boundary of the Selkirk Mountains is the deep and wide Columbia-Kootenay trough or "Great Rocky Mountain Trench" within which the Columbia flows north-westerly, and the Kootenay south-easterly. The greatest elevation of the trench above sea-level is at Canal Flats at the head of Columbia Lake—2,740 feet. Almost through the centre of the Selkirk Mountains a similar trench has been cut, consisting of the long, narrow valleys of Flat Bow or Kootenay Lake, Howser River and Lake, the Duncan River flowing southward and the Beaver River flowing northward. The highest part of this trench is at the divide between the two streams last named—4,600 feet above sea-level. This less deeply cut and narrower trough joins the great Columbia trough close to Beavermouth Station on the Canadian Pacific Railway. In an article on the subject published in the Geographical Journal (Vol. 27, p. 600), Dr. Reginald Daly has named it the Purcell Trench and would thereby seem to indicate that all enclosed by it and the Columbia-Kootenay Trench is part of the Purcell Range. On Palliser's map of "Explorations in the Rockies from 1857-1860" the Purcell Range is shown occupying but an insignificant part of this area. On the same map the Selkirk Mountains are shown to occupy only the upper half of the area enclosed by the Columbia and Kootenay Rivers.

Now, there are no maps earlier than Palliser's until you get back to Thompson's (1812), and Dawson appears to have followed his (Palliser's) nomenclature. Little change had been made since Dawson's map of 1886 until Dr. Daly introduced the appellation, Purcell Trench, which naturally extended the area of the Purcell Range. It seems to fill a want and to dispose of a somewhat complicated geography.

Their geological structure distinctly separates the Selkirks from the Rockies, so that it is reasonable to define the Selkirk Mountains as bounded by the loops of the Columbia and Kootenay Rivers, and the Purcell Range as a subdivision, bounded by the Columbia-Kootenay and Purcell Trenches. This places the Dogtooth, Spillimacheen and Shuswap Mountains as minor groups of the Purcell Range, the first-named being situated at its northern extremity. Defined by limits, the Dogtooth Mountains are bounded on the north and east by the Columbia River, on the south and west by the north

branch of the Spillimacheen River, Grizzly Creek (west branch), and Beaver River. They embrace the serrated line of peaks seen up and down the Columbia from Golden, and the so-called Prairie Hills along the Beaver River. Directly to the south lie the Spillimacheen Mountains whose outlying northern spur is Bald Mountain.

Looking from the railway train, the Dogtooth Mountains present a series of pointed summits isolated by hazy blue valleys reaching far back into the shadows. And the appellation exactly suits these sharp fangs whose ragged tops are white with snow. In the valley-bottom north of Golden, the river flows lazily in great loops broken into channels by little islands and bars; south, are lagoons of many shapes and sizes set in the broad, low marshes through which the river winds serpentwise, either margin fringed with the deciduous cottonwood and willows, its course showing from above like a tortuous canal. From the river-bottom the valley rises in a series of benches thickly timbered with fir, spruce, cedar and hemlock of giant size—a deep, dark forest sweeping backward and up the mountains to the trees' limit, broken only by the emerald-green strips of alder, willow and devil's club, those speedy growths with which Nature covers the ravages of the avalanche.

The valleys of three principal streams intersect the Dogtooth group. Near the centre, Canyon Creek flowing to the Columbia some six miles above Golden, cuts diagonally across its axis, the valley being connected by a low pass with that of Grizzly Creek flowing nearly due west to the Beaver River, three miles south-east of Bear Creek Station on the Railway. The northern face of the group is cleft by Quartz Creek Valley which gives access by an easy pass to Grizzly Creek. Quartz Creek joins the Columbia at Beaver Mouth. The main line of travel across this range is by way of Canyon Creek, so called from the deeply cut rift through which it flows for several miles where it debouches from the hills. Unfortunately there is no bridge at Golden, and access to the Canyon Creek trail is only possible by swimming horses opposite the mill, a mile from the town. From this point a miner's trail cuts across the spur of the mountain and joins Canyon Creek Valley at the head of the gorge, whence it follows the creek to its source. In the upper portions of the valley it needs clearing and remaking.

All through these mountains are found trails made by prospectors and miners. They lead up the valleys of the larger streams and zig-zag up almost impossible slopes to the "prospects," where may be found a hole in the mountain and a pile of ore on a "dump" outside. In some places the work has been more extensive and a log cabin with stove and bunks is found on a nearby crag, commanding a wide circle of alpine scenery "worth a king's ransom," doubtless unheeded and possibly unseen by the man of the ore-pile. And yet in some dumb-fashion he may have felt the majesty of high mountains. These trails give access to the upper valleys where the real attractions are. They are grandly alpine; open grass-lands with great shapely unbrageous spruce trees, brilliant flowers and lakelets, silver streams meandering everywhere, the green slopes rising gently to bold bare cliffs and steep slopes of scree, crowned by snowy heights, glacier-hung and showing long connecting arêtes such as the explorer loves. In spring and early summer the valleys are

ablaze with the yellow adder's tongue (*Erythronium*), the globe flower (*Trollius*), the Indian paint-brush and painted-cups (*Castilleias*), the Harebell (*Campanula*), the Anemone and myriads of wild flowers that delight the eye of the traveller and warm the heart of the botanist.

At the heads of many of the valleys (and this is notable) are emerald and blue lakes like those that are a distinctive feature of the Rockies. As everywhere else in the Selkirks, the whistler (*Arctomys Columbianus*), and the Parry marmot abound. The Rocky Mountain goat (*Haplocerus Montanus*), caribou and smaller deer are found in the valleys, and bear may be seen almost any time on the "slides," those avalanche tracks down the mountain sides where grows the succulent vegetation so toothsome to Bruin.

The Canyon Creek trail could readily be extended to Grizzly Creek and so connect with the trail up the Beaver Valley from Bear Creek Station. A similar trail can be taken over the pass to the head of Quartz Creek and down its valley to Beavermouth Station on the C. P. Railway. A trail now branches from the maine one up Canyon Creek which it crosses and leads up the south-east branch to the head of its valley. Here a pass is found which makes access easy to the trail leading up the north branch of the Spillimacheen Valley. but it needs a continuation of the trail through this pass and down the western slopes beyond it. The Spillimacheen trail leads to Bald Mountain and to the head of the west branch of Grizzly Creek, up which there is a prospector's trail, now sadly out of repair. From Bald Mountain may be had splendidly spectacular views of the Selkirk eastern escarpment and its long array of ice-cascades that break from every hollow and through every cleft.

Again south of Canyon Creek, Twelve-Mile Creek enters the Columbia above Golden. A trail leads up this stream to a "prospect" that at one time gave much promise. It is in a splendid amphitheatre or rather series of amphitheatres, a place of bright sunshine and crisp air for health-seekers and nature-lovers.

From the heights of the Dogtooth Mountains, one may obtain a comprehensive view of the wonderful flat trough of the Columbia River a distinctive feature of the Canadian Rocky Mountains: "River, lake, lagoon, pond, marsh, forest-tract, railway, village, are all laid out between the hills as on a map; now bright in the sunshine. the streams glistening like silver, and anon hidden by swirling clouds with only a glimpse here and there shining through a rift, giving the whole an eerie 'unco' look as from another world, a world of snowy heights above the clouds; where trees are dwarfed and distorted. where rocks are queer shapes, and birds are snowy white. I have often sat and watched these cloud-blankets swirl and roll silently below, disclosing glimpses of what seemed to be a nether region."

As yet the peaks of the Dogtooth Mountains have not been named and consequently, it is not possible to refer to them individually. At the heads of many of the deep indentations running into the group from the Columbia and Spillimacheen Valleys, are charming little lakes of beautiful blues and greens, and some very picturesque waterfalls; nearly all the major valleys have trails leading into them, which will be fit for travel when the fallen timber is cleared away.

Rn. 24
Rn. 23
Rn. 22
Tn. 30
Tn. 27
Tn. 26

R. 21

R. 20

R. 19

R. 18

Tr. 30

Tr. 29

Tr. 28

Tr. 27

TOPOGRAPHICAL MAP

OF THE

DOGTOOTH MOUNTAINS

IN THE RAILWAY BELT OF

BRITISH COLUMBIA

From Photographic Surveys by Arthur O. Wheeler F.R.G.S.
Assisted by M.P. Bridgland D.L.S. and H.G. Wheeler
— 1907 —

NORTH

REFERENCES

Triangulation and camera stations shown.....

Roads.....

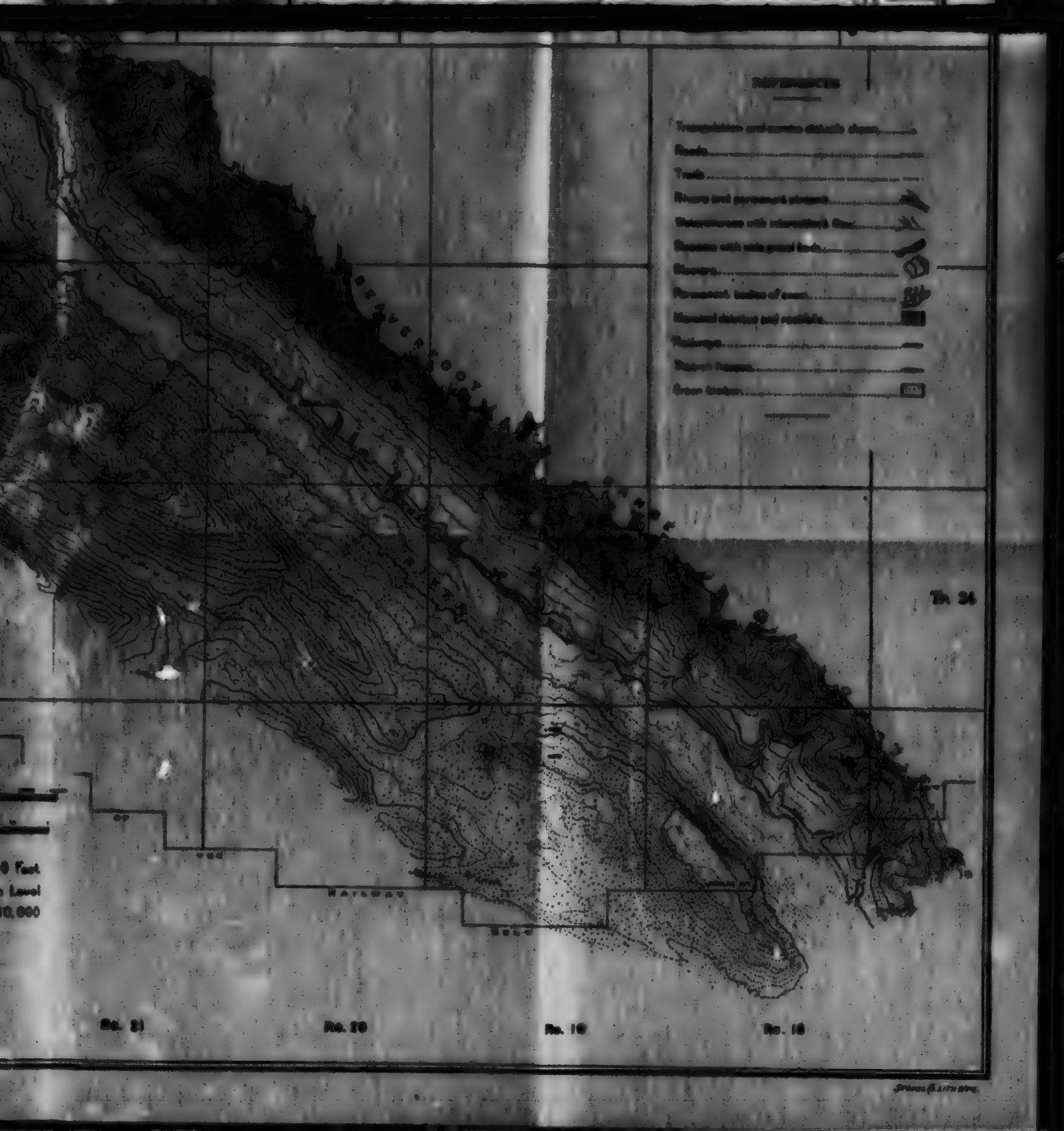
Trails.....

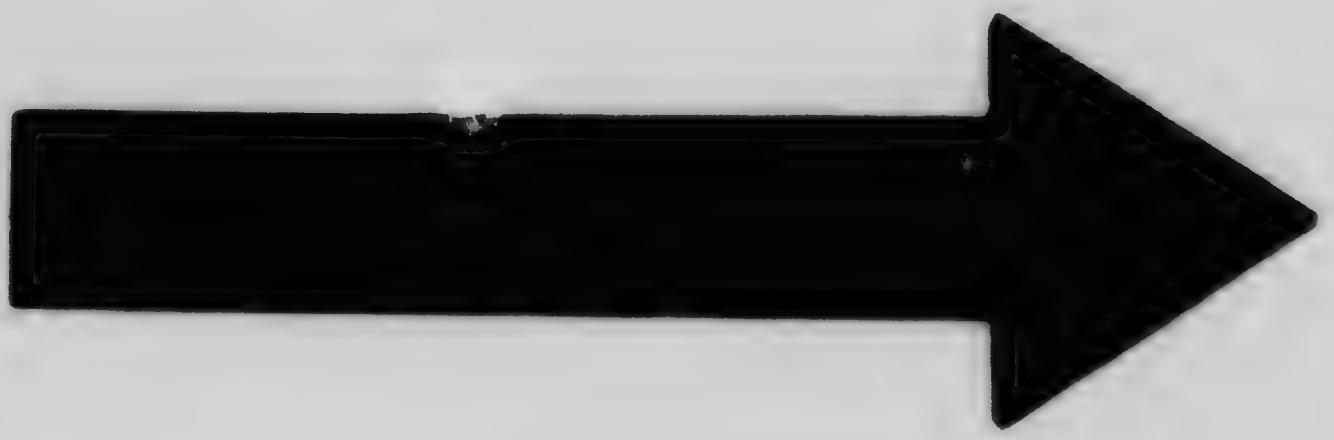
Rivers and permanent streams.....

Watercourses with intermittent flow.....

Streams with wide gravel beds.....

Tr. 26
Tr. 25
Tr. 24
Tr. 23
Scales
Contour Interval 250 Feet
Datum Mean Sea Level
Natural Scale 1:62,500
Ra. 24
Ra. 23
Ra. 22


BEAVER FOOT
Tp. 24
Rg. 21
Rg. 20
Rg. 19
Rg. 18



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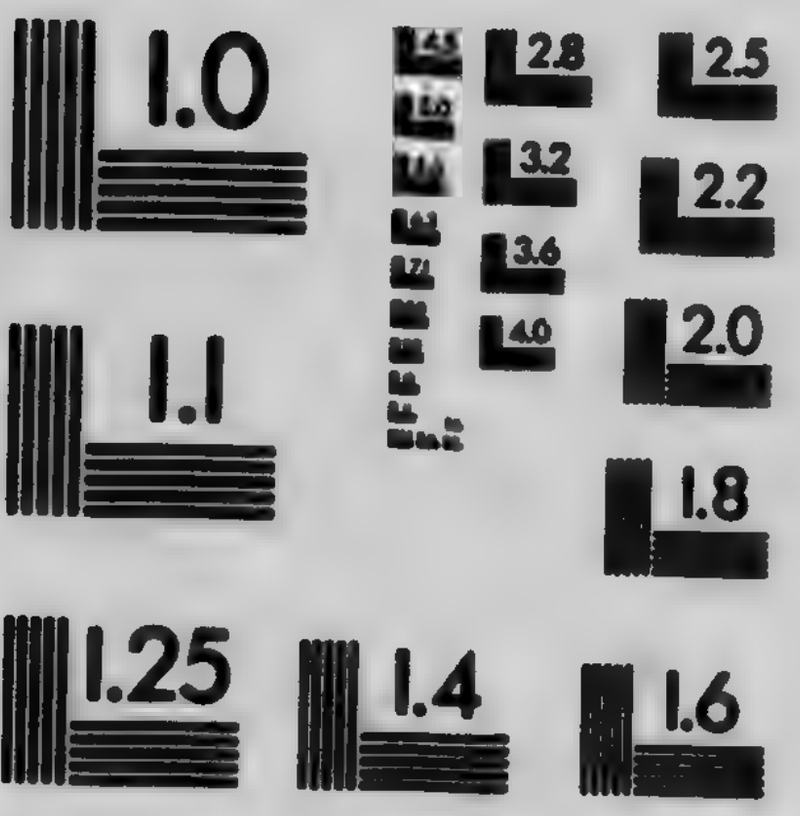

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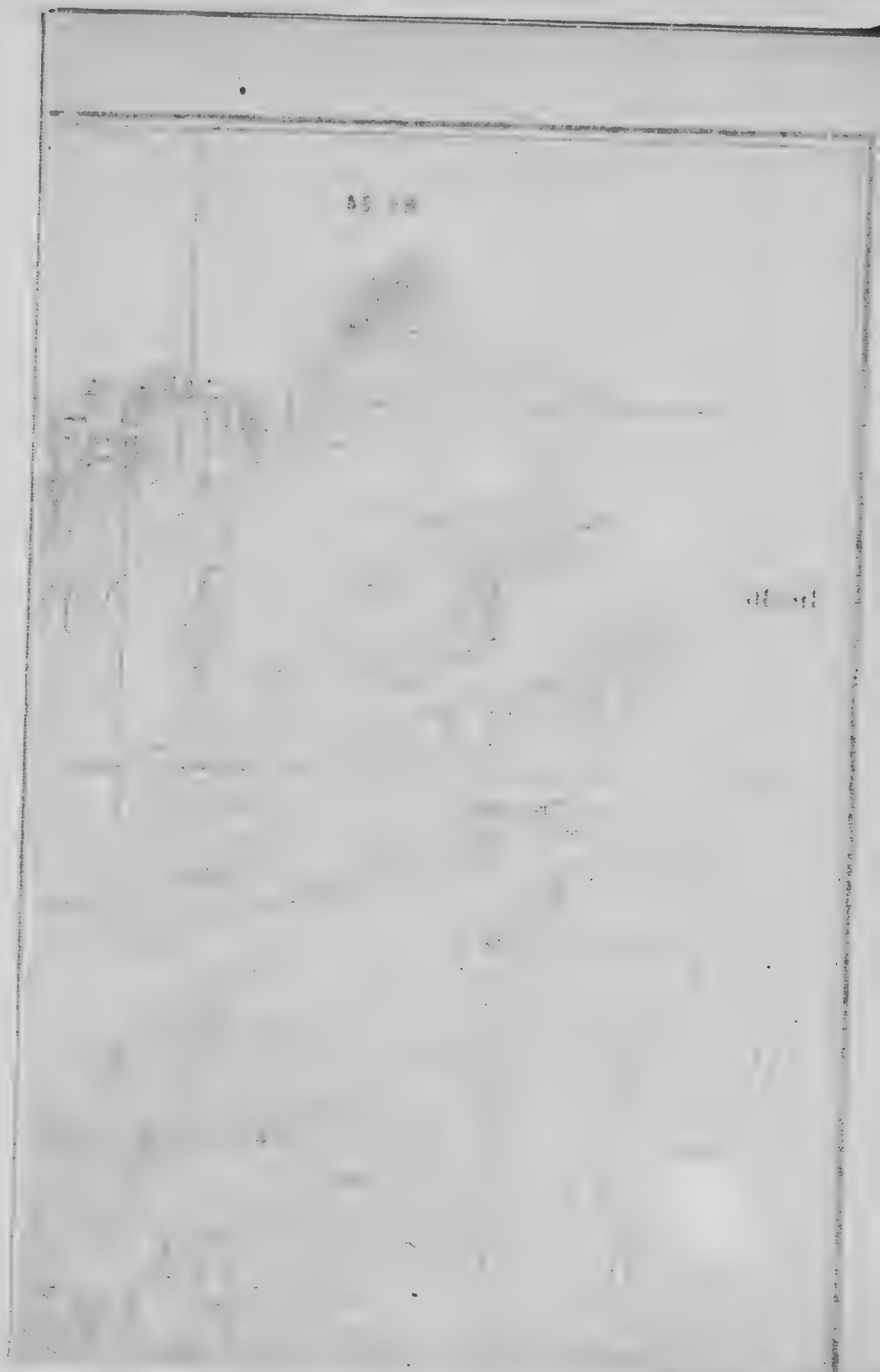

THE SPILLIMACHEEN MOUNTAINS.

Location: South in the lower Selkirks, between the great Columbia Trough and the parallel trough made by the Beaver and Duncan Rivers.

Except to prospectors, the Spillimacheen Range is an unknown country awaiting exploration by the mountaineer. In September, 1910, Mr. Wheeler and Dr. T. G. Longstaff made an expedition into these mountains by way of reconnaisance; and though the season was late and the weather variably bad, somewhat was accomplished in a photographic survey of the route followed. (See later History of the Selkirks). This was the first exploratory expedition under the auspices of the Alpine Club of Canada.

Thus the Spillimacheen Mountains are unmapped, unmeasured and unnamed, save for an occasional local name by prospectors whose country it has hitherto been. These have tales to tell of alpine sights there worth seeing. Mr. Wheeler has heard old prospectors describe a cataract falling 2,000 feet down a precipice into a valley rimmed by high cliffs, the exit of the stream being through an impassable canyon—ingress or egress for man and beast being only over the high rock-rims. Thus, here in the Occident has been discovered the literal counterpart of that fabulous valley of the Orient which Rasselas found so nearly impossible of egress. Prospectors tell of other waterfalls, notably one falling 800 feet in a series of striking cascades. Of course when actual measurements are obtained of mountains and waterfalls alike, the poetic arithmetic is always reduced by relentless science. Mr. Wheeler himself, saw a wide snowfield from whose centre a group of snow-clad peaks in pyramids, cones, towers, pinnacles, "rise superbly." He saw deep valleys leading up to beautiful park-like alplands in the heart of the range—all virgin ground for climber, scrambler, botanist, photographer. From the heights of the Dogtooth Range this new mountaineering ground can be seen to advantage.

Route: The South Fork of Canyon Creek offers a pass opening to the Spillimacheen, and a trail now leads almost to the pass. A connecting trail is needed from the summit of this pass down the slopes of the Spillimacheen. (For route to this pass, see "Unknown Trails Between Golden and Glacier.")

SOME UNKNOWN TRAILS BETWEEN GOLDEN AND GLACIER.

(Followed by Mr. Wheeler.)

A journey by trail through the Dogtooth Mountains can even now be made by intrepid persons indifferent to difficulties. With a bridge across the Columbia at Golden, the miners' old trails repaired, and a few new ones blazed, it would be a comfortable and delightful excursion. At present the camp-outfit must be ferried over the River while the horses swim. The trail leads back from the River through a burnt tract, then through green woods and up the mountain sides over a ridge to Canyon Creek, the important little river flowing from the heart of the Dogtooth Range. It has two tributaries leading to abandoned mines; that is, to primitive shafts and a few log shacks on mountain-sides. These three valleys of Canyon Creek have meadows and alplands the habitat of mountain flowers and studded with wide-branching spruce sufficient for shelter through a whole week of rain—first-rate camping grounds. The South Fork of Canyon Creek offers a route to the Spillimacheen trail, requiring only a trail from the summit of the pass at its head down the opposite slopes. Mr. Wheeler twice took a pack-train over this pass as it is.

The head of Canyon Creek itself is surrounded by glacier-bearing mountains whose hanging valleys, holding turf and tarns and streamlets and little parks, are a beautiful feature. From the peaks on one side there is a good view of the Columbia Valley showing the railway; from those on the other, the Spillimacheen Mountains show in all their splendours and fascinations of *terra incognita*, and across the deep Beaver Valley, the more familiar snow-clad giants of the Selkirks appear as if close at hand.

This pass is low and easy, albeit some distance above timberline, and leads to the North Branch of Grizzly Creek which has no trail, though a trail along the bottom of the valley to its junction with the East Branch would be a simple matter. Crossing the stream at this point it would zigzag up the hillside to joint the trail from Bear Creek Station, an easy journey from this on. From Bear Creek Station to Glacier House the Railway is followed. A trail might be made along the bottom of Bear Creek Valley to Rogers Pass Station, although it would involve annual repairs, owing to the avalanches from Mts. Macdonald and Tupper. The objection to the railway route is the long line of snow-sheds and the possibility of being caught by trains.

From the point where the proposed trail would join the trail to Bear Creek Station, the traveller has choice of a route to the head of the North Fork of the Spillimacheen and so into the Spillimacheen Mountains. At the junction of the Valley of Grizzly Creek with the Valley of the Beaver River, a trail leads for twenty miles beneath the eastern escarpment of the Summit Range of the Selkirks to the head of the Beaver Valley across the Beaver-Duncan Pass into the Duncan Valley as far as Trout Lake. This is the interesting divide where are the two glaciers, sources of the two rivers, and where on days of heavy melting, waters from the Beaver Glacier may run over into the Duncan River.

On Canyon Creek Trail

An Annual Meeting, A. C. C.

CHAPTER VI.

REVELSTOKE.

Revelstoke, originally named "The Eddy," from a circular erosion in the right bank of the Columbia near by, then renamed "Farwell" for the surveyor who laid out the town-site, received its present name in honour of Lord Revelstoke, an English financier and member of the C.P.R. Company who visited the Canadian West in the late eighties.

The altitude is 1,503 feet. It is interesting to compare the altitude of Revelstoke, of Rogers Pass (4,309 feet) near Glacier, and of Golden (2,560 feet). The profile map of the railway shows the reader by what steep ascents the railway line follows the mountain highway. From Golden across the Selkirks to Revelstoke, the distance is 96 miles. Following the map, we observe how the grade falls slightly towards Beavermouth (135 feet in 29 miles), then rises steeply to Rogers Pass (1,874 feet in 21 miles), and descends abruptly again to Revelstoke (2,806 feet in 46 miles).

Revelstoke is picturesquely situated between the Selkirks and the Gold Range west, on the Columbia River immediately north of its junction with the Illecillewaet. On either side the snow-clad mountains stand: on the south-west in the Gold Range Mt. Begbie's glaciers, eight miles away, seem close at hand; on the south-east rise the sharp spires of Mts. Mackenzie and Cartier; directly west are other white peaks of the Gold Range, and the dark recesses of the Jordan and Tonkawatla Valleys. Southward sweeps a long vista of the Columbia Valley between the Gold and Selkirk Mountains, the river itself a network of islands and channels.

The valley is here a mile wide at the base and 10 miles wide from crest to crest of the mountains; and the river varies in width from 800 to 3,000 feet, its volume greatly increasing since its detour of the Big Bend enclosing the Selkirks north. At Revelstoke the Railway makes its second crossing of the Columbia and enters the Gold Range by the Tonkawatla Valley towards Eagle Pass.

Revelstoke is an important railway town, being a Divisional Point where are the Company's shops for manufactures and repairs and the headquarters of the Divisional Superintendent and his staff. Also, it is the junction of the Arrow Lakes Branch of the Railway, a short line of 27 miles connecting with the Company's steamers on Upper Arrow Lake. It is the distributing centre of supplies for the Kootenay mining camps, for the lumbering districts, and headquarters for miners and prospectors in all the regions contiguous. There are several large mills and several factories. The soil is very fertile and no irrigation is necessary. Near the town are areas of arable land suitable for mixed farming and fruit raising. A large tract hitherto leased for timber will soon be opened for agrarian settlement.

The timber is very large and includes cedar, pine, spruce, fir, and hemlock. In the country immediately north are mineral deposits including copper, silver, free gold and mica. South, is a rich mountainous country where galena and free milling quartz are mined. Much English capital is invested in timber and mines in the region.

Illecillewaet Canyon, Revelstoke, B. C.

The Club House, Banff

The climate is temperate, the winters never severe, and the evenings are cool in the hottest summer months.

Behind the town is Mt. Revelstoke on which a bridle-path leads to the park—locally Victoria Park—the fine flowering alp-lands well gladed and well watered, commanding wide views of the surrounding mountains (see Revelstoke Park).

Some interesting roads radiate from the town and are being extended from year to year. One running along the Tonkawatla River through Eagle Pass will pass Three Valley and Griffin Lakes and follow the Eagle River to Sicamous and Shuswap Lake. Another attractive road leads through cedars and giant conifers down the Columbia Valley, and one follows the Illecillewaet River to Greely Creek. A long road up the Columbia will, when completed, run as far north as Tête Jeune Cache to a junction with the Grand Trunk Pacific Railway. These roads by rivers and lakes through mountain forests where there is scarcely a sign of humanity except the road itself and where the small game chatters under the boughs, are not only desirable for riders and drivers of horses and motors, but for the immortal walkers akin to Hazlitt and Stevenson. And many a road in these mountains of the newer world await the walkers who will not only give them "understanding and a tongue" but the written word. Tourists will find a three-hours' tramp going and coming with dinner waiting at the end, a good experience of these forest roads.

The same is true of the trails blazed by trapper or miner, or by the Government for holiday seekers. Among trails recommended for interest and beauty are one to Downie Creek and thence to Canoe River and Tête Jeune Cache on the upper waters of the Fraser (a good country for moose); one up the Jordan River and its tributary, locally named Canyon Creek from the steep forest-crowned gorge through which it flows; one to the park already named, and various trails to old placer-mines.

Visitors should not miss an excursion by steamer up the Columbia towards the Big Bend, from Mosquito Landing (local name) to Downie Creek. Its interest is partly of the grandeur of the high mountains rising almost from the river's margin, and partly of associations. Much water has run past these mountains since the early voyagers, Indian, French-Canadian, English, Scottish, American, for discovery and for the fur trade, and even for art's sake and religion's, paddled round the Big Bend down stream and u stream. This old River, ever replenished with new waters, these old mountains clothed with the old forests and crowned with the new snows must forever retain their associations of those daring men who conquered the wooded passes and this turbulent waterway long before the railway was a dream, and made it the trade-route across the dividing mountains.

There are over half a dozen hotels in Revelstoke all conveniently situated. The C.P.R. Hotel, which has accommodation for over 100 guests, has the choice of situations on a bench looking towards the rising mountains and receding valleys. Its one drawback is the noise at night from shunting engines, and visitors would do well to avoid rooms on the near side of the hotel. There are excellent shops and several liveries where horses and traps can be hired

at the same rates obtaining in Golden. Also, there are local guides

allow a leisurely round expedition. There are small glaciers. A guide

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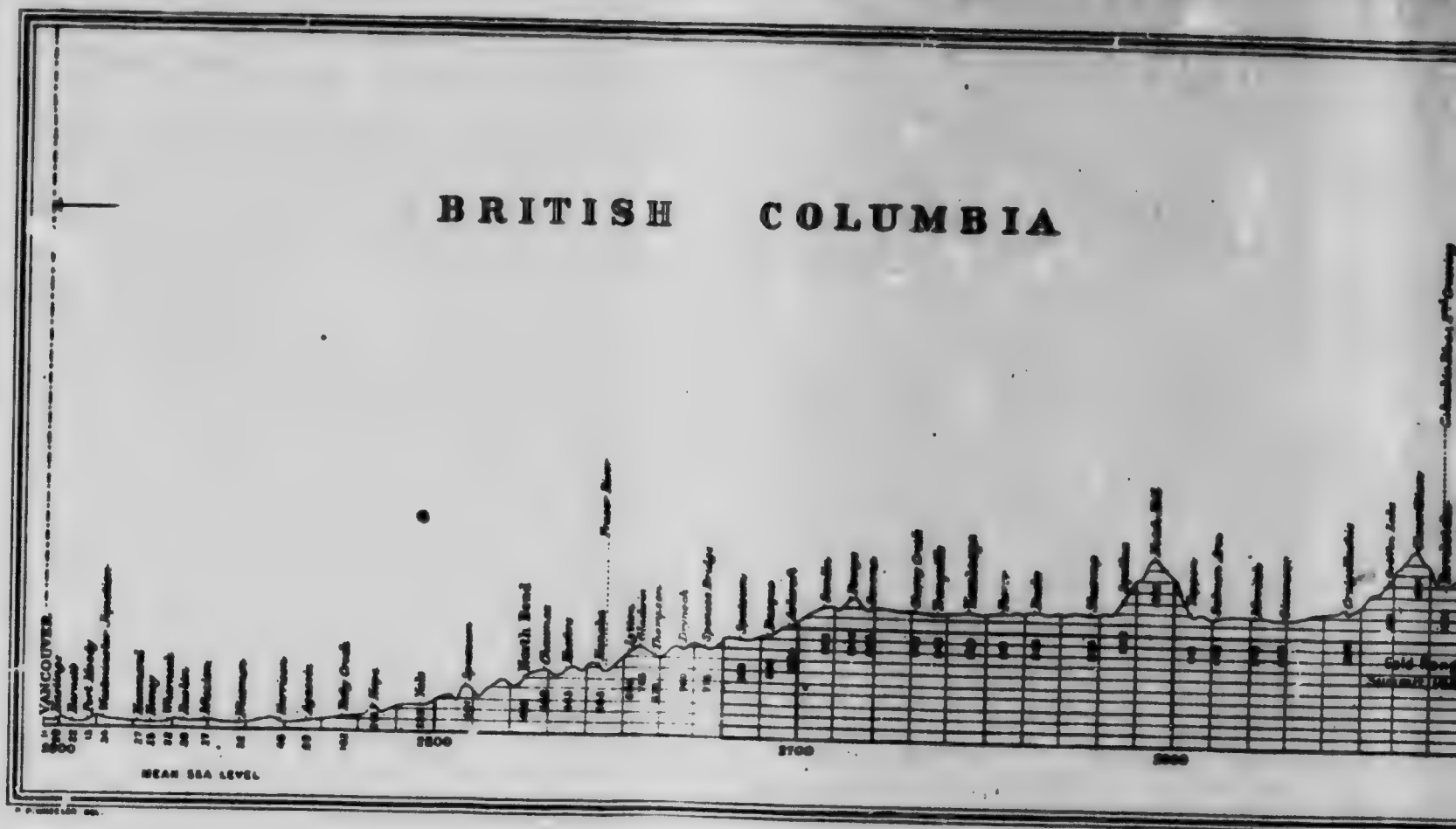

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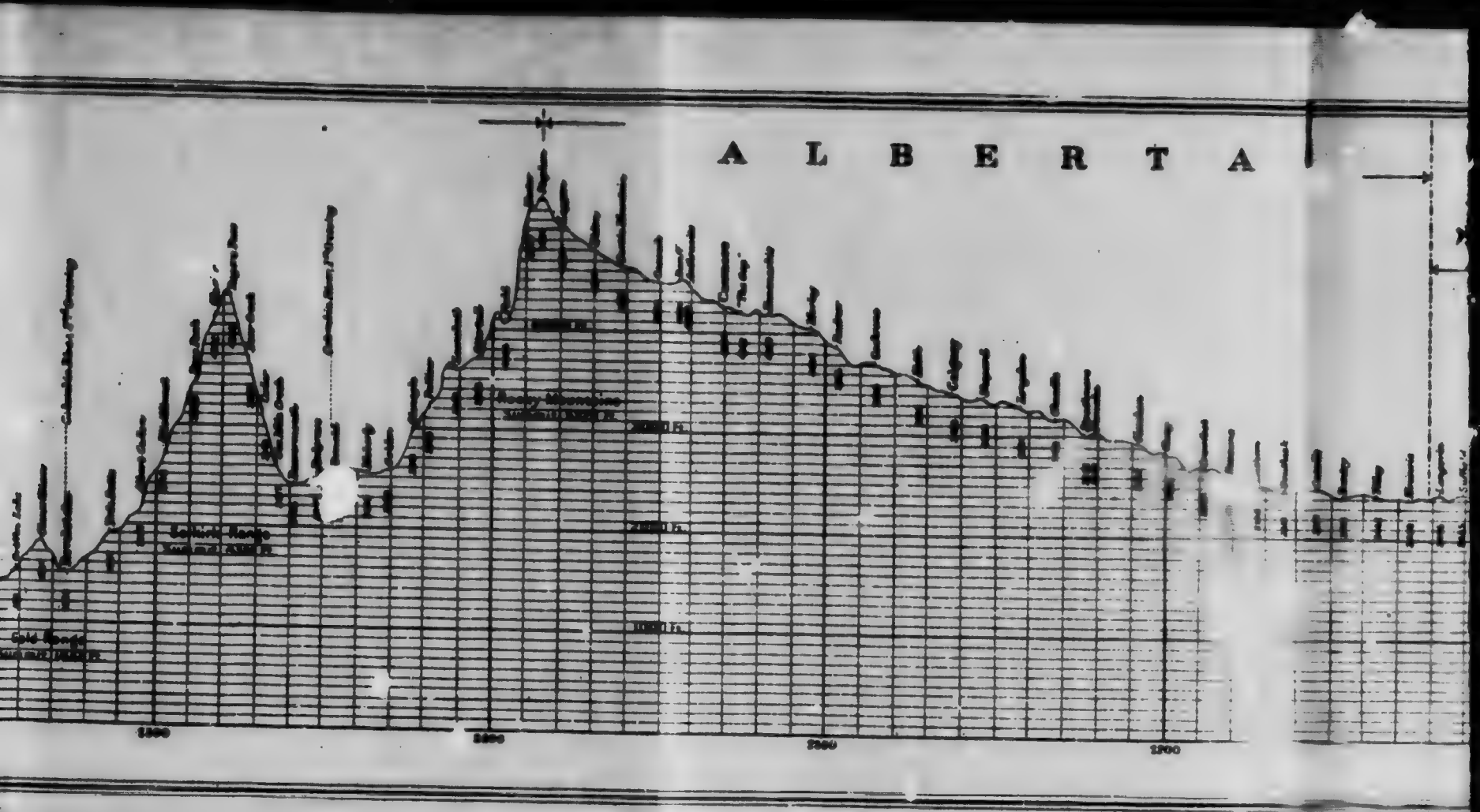
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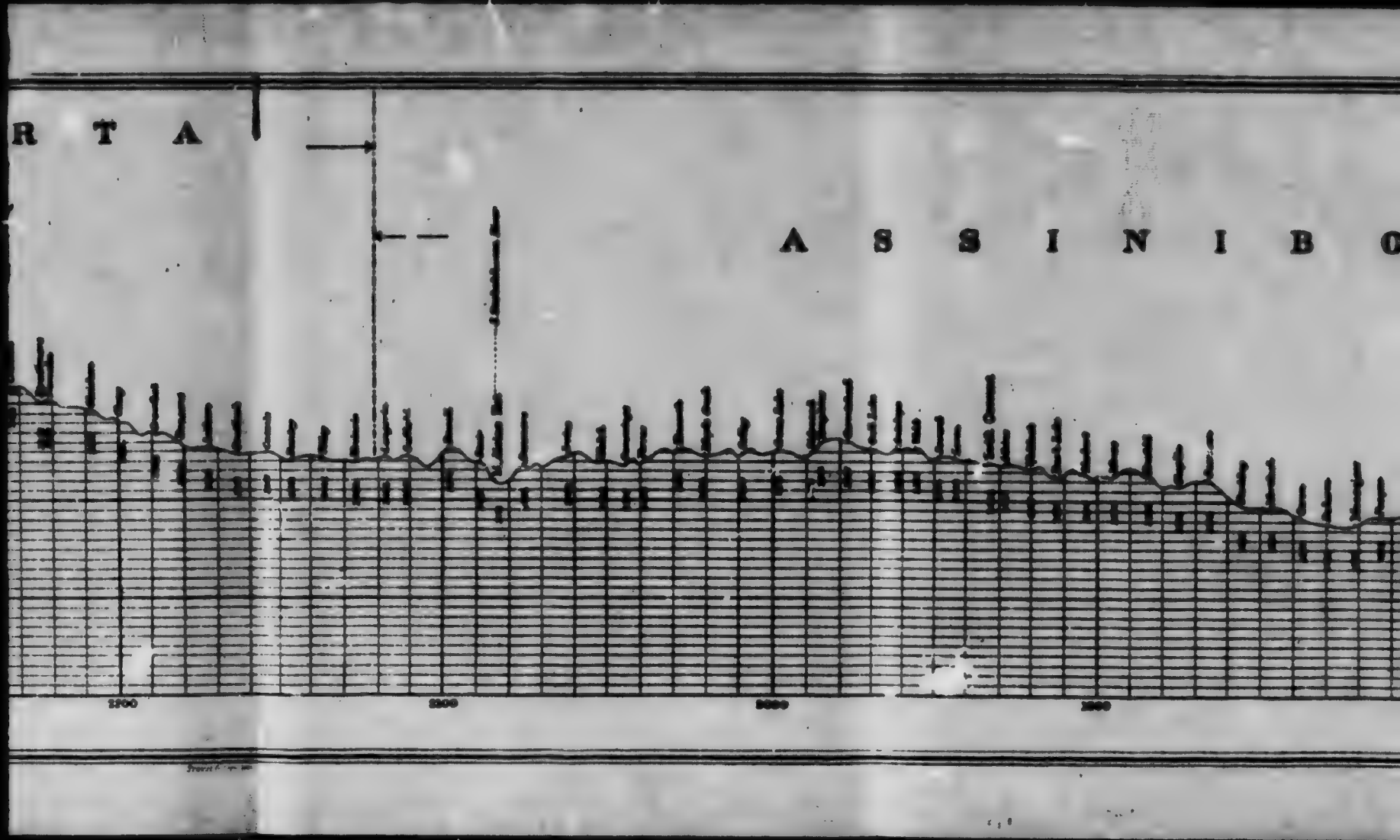
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PROFILE OF CANADIAN PACIFIC RAILWAY

MAIN LINE

WINNIPEG TO VANCOUVER

Scale of

MANITOBA

Accompanying Report on Altitudes in the Dominion of Canada,
by James White, F.R.G.S., Geographer, Dept. of Interior.

The climate is temperate, the winters never severe, and the evenings are cool in the hottest summer months.

cellent shops and several liveries where horses and traps can be hired

at the same rates obtaining in Golden. Also, there are local guides who know where the best fishing is to be found in the streams, and where the caribou, goat, bear and other game, big and little, most frequent the hills on both sides of the river.

The population is about 4,500 souls (1911), and there is a brisk atmosphere of business on the streets. Revelstoke had the first local mountaineering club to affiliate with the Alpine Club of Canada.

Mountains and Places of Interest Reached from Revelstoke.

Mt. Begbie—Name: Called for Sir Mathew Begbie, Chief Justice of the old Crown Colony of British Columbia. As Judge Begbie in the sixties, his Government sent him to the lawless Cariboo Gold Mines up the Fraser River, with instructions to establish law and order. He was another Lord Braxfield, the renowned "hanging judge," with a difference: Begbie feared God but regarded not man. Tradition says that he condemned the criminal without mercy on a Saturday; and on a Sunday, after doing his genuine devotions in public service, went into the woods and chose the tree upon which to hang him on a Monday. By this method of unremitting justice, the evil-doer was terrified into restraint and the country made safe for the honest and law-abiding miner.

Altitude: 8,946 feet—or 7,443 feet above the valley.

Location: South-west of Revelstoke, in the Gold Range, west of the Columbia River and south of the railway; distance from Revelstoke, 8 miles. Route: Crossing the bridge, Mt. Begbie is reached by a waggon-road and trail to its base. Time required for the round expedition: 2 days. A bivouac can be made at timber-line on the first night; and the ascent of the upper part of the mountain, the descent, and return to Revelstoke will occupy the second day.

The mountain is triple-peaked. The main peak was first climbed in June, 1907, by the late Rev. J. C. Herdman, one of the earliest Canadian enthusiasts in native mountaineering, the Rev. J. R. Robertson and Rupert Haggen, with Edouard Feuz, Jr., Swiss guide from Glacier. They slept out two nights and spent three days on the expedition. Although the weather was stormy at times, with considerable rain and snow, the climbing was not very difficult. Mt. Begbie has a number of fairly good-sized glaciers and is well worth the attention of climbers. The two minor peaks on the massif were still virgin in 1910. View: Mt. Begbie stands up conspicuously above the surrounding mountains of the Gold Range. From its upper slopes and summit, there is an especially good view of the Columbia Valley north towards the Big Bend, and of the Clach-na-coodin group of peaks rising out of the wide snowfield with the same Celtic name.

Mt. Cartier—Name: By Order in Council, after Sir George Cartier, one of the fathers of Canadian Confederation. Altitude: 8,562 feet. Location: In the Selkirks, 7 miles south-east of Revelstoke from where it is seen prominently; overlooks the Columbia Valley. Route: Mt. Cartier is most conveniently climbed from a point named "Green Slide" on the Arrow Lakes Branch of the C. P. Railway 9 miles from the town. Time required: 2 days will allow a leisurely round expedition. There are small glaciers. A guide

is unnecessary. View: The summit commands an extensive view of the Columbia Valley, the numerous channels and islands displayed in detail; also a striking view of Mt. Begbie and other massifs of the Gold Range with their glaciers and snowfields. Mt. Cartier is frequented by goat and caribou. Mr. Wheeler reported some excellent goat hunting on this mountain while making a survey. Indeed it was not hunting so much as shooting, the juxtaposing being accidental.

Clach-na-coodin Range—Name: Evidently conferred by a Scotsman from Inverness, after the Clach-na-cudden, or "Stone of the Tubs" regarded as the palladium of Inverness. Altitude: 8,675 feet. Location: a group of mountains between Silver Creek, the Illecillewaet River and the Columbia above Revelstoke. At the crest of the range is a wide snowfield of from 10 to 15 square miles in area, reaching out in many arms and at different levels, and cut up in many parcels by separating rock-ridges. At the western extremity are rolling flowered alp-lands studded with irregular groves of spruce, fir, and hemlock and numerous pretty little lakes. Here Revelstoke found its park already laid out by nature without the intervention of any human landscape gardener.

Copeland Mt.—Name: For Mr. Copeland an Englishman. Altitude: 8,500. Location: In the Gold Range, west of the Columbia and north of Mt. McArthur; distance from Revelstoke, about 10 miles. Route: Reached by a trail up the Valley of the Jordan River which enters the Columbia a little north of the Railway. Time required: 2 days. Mt. Copeland has several glaciers.

Greeley Creek—Name: Origin unknown. Location: Joins the Illecillewaet River from the south-east 8 miles east of Revelstoke along the railway. A deep, heavily timbered valley similar to many others draining the lower slopes of the range on its western watershed. On the higher slopes caribou and small deer are plentiful. There is a small mill at the railway crossing which operates spasmodically. Route: Reached by a good wagon road following the Illecillewaet, a drive affording excellent views of Mt. Begbie, the Columbia Valley and the town.

Illecillewaet Gorge—A box canyon 2 miles from the town. Route: Reached by following the railway track or by a wagon road. The river is confined in a canyon only a few feet wide with high, straight walls, at the end expanding into a pool made by a dam over which it falls in a cataract of some eighty feet. Here is the "City Power and Light Plant" of Revelstoke.

McArthur Mt.—Name: In honour of J. J. McArthur of the Dominion Topographical Survey; originally named Mt. Macpherson. Altitude: 7,800 feet. Location: West of the Columbia in the Gold Range, north of Mt. Begbie and south of Mt. Copeland; 6 miles distant from Revelstoke. Time required for climbing and returning: 14 hours.

Mackenzie Mt.—Name: By Order-in-Council after Sir Alexander Mackenzie, once Premier of Canada. Altitude: 8,064 feet. Location: Immediatey east of the junction of the Columbia and Illecillewaet Rivers: 5 miles south-east of Revelstoke. A shoulder of the mountain (Altitude: 7,718 feet) having the appearance from the valley of a separate peak, was named Mt.

Tilley. Route: (1) Reached from Revelstoke by following the railway track for 2 miles eastward to the log jam at the foot of the Box Canyon where the river is crossed and the ascent made directly. Time required: 7 hours; for the round excursion 14 hours. (2) The base of the mountain may be reached by taking the road south across the Illecillewaet and following the river to some suitable point. Mackenzie and its west shoulder looking like separate peaks from the valley early received the local appellation of "Twin Buttes."

First ascent: In 1886 by Messrs. J. J. McArthur and O. J. Klotz. It has several small glaciers. Mr. Klotz describes it as a very stiff climb, partly owing to devil's club on the lower slopes. He told of finding, 4,000 feet above the valley, one of those typical gladed meadows beautiful with streamlets and tarns and flowers; its spruce trees being 12 inches in diameter. The streams were clear and cold "flowing between banks lined with grass and moss." Between the peak and the shoulder of the mountain is a glacier which feeds the stream and lake below. Mr. Klotz reported many tracks of goat and caribou.

Of this mountain Mr Wheeler says: "The altitude of the railway at the base is 1434 feet, leaving a climb of 6,630 feet to the loftiest summit, which is only 50 feet less than the height of Sir Donald above Glacier House; but it is much more tiring."

View: Mt. Mackenzie commands an extensive view of the Columbia Valley north and south, of the Illecillewaet Valley east, and of the Gold Range west.

Revelstoke Mt. and Park—A mountain behind the town containing the park (Victoria Park) which covers an area of some 2000 acres of alp-lands at a mean elevation of 6000 feet above sea. The groves are chiefly of spruce, hemlock, and fir; there are numerous lakes, and the mountain flowers follow each other in their season from spring tili late summer. View: The view includes snow-capped mountains in every direction, and the valleys of the Columbia and Illecillewaet. Sometimes in sunny weather the visitor in the park may find himself above the clouds. An easy trail for man or horse winds gradually up the mountain. It is a favorite camping ground.

Silver Creek—Name: Local, origin unknown. **Location:** Joins the Illecillewaet River, 2 miles west of Albert Canyon Village. A large stream, fed by four tributaries and draining a large area, it is the principal drainage on its side of the Clachna-coodin group of mountains. The tributary streams flow through fine, deep valleys heavily timbered on the lower slopes and with series of turfy alplands rising above towards the glacier which nourish many rivulets winding through them and feeding the streams below. The main stream is renowned locally for the number and size of its trout.

Silver Tip Falls—Location: About 8 miles from Revelstoke and reached by a wagon road through the Columbia Canyon. In places the road follows close to the torrent but 100 feet above it. They are worth a visit, especially in hot weather when the melting snow increases their volume.

Twin Buttes—Name: Local. Earliest name of Mt. Mackenzie and its shoulder, Mt. Tilley. (See Mt. Mackenzie.)

Twin Butte Station—Name: By the C. P. R. Company in relation to Twin Buttes. Altitude: Rail-level 1907 feet. Location: A siding on the railway 10 miles west of Albert Canyon Station and 12 miles east of Revelstoke. It is from this point that Mt. Mackenzie and its shoulder, Mt. Tilley, are seen to resemble twin buttes.

Twin Creek—Name: Local. Altitude: At the railway crossing 1890 feet. Location: Joins the Illecillewaet River from the south, 1¼ miles east of Twin Butte Station. Two streams of nearly equal volume flow through deep, narrow, heavily forested gorges and unite almost at the crossing. The bridge is a high, curving trestle, a dangerous place for track-walkers if overtaken by the train.

The Arrow Lakes.

From Revelstoke the Arrow Lakes Branch of the C. P. R. Railway follows the east bank of the Columbia for 27 miles to Arrowhead, the lake port whence the Company's steamers carry passengers into the Kootenay country by the Lake route which connects with the Crow's Nest Pass Railway. The Upper and Lower Arrow Lakes are expansions of the River, lying in a mountainous country of great natural beauty, with plenty of sport for hunter and angler. Between the Lakes, the River flows bending twice, and below the Lower Lake at West Robson it is spanned by a railway bridge. Below West Robson, the Kootenay River, which has made its great detour south of the Selkirks, joins the Columbia, flowing from its own expansion of Kootenay Lake. Since they flowed parallel from their sources, one north and the other south, passing each other by scarcely a mile, these two great rivers surrounding the Selkirk Mountains have run long, long ways. But here they meet at last, and the Columbia continues the journey south to the Pacific Ocean. An interesting history of the Columbia River has been written by Professor W. D. Lyman, Whitman College, Walla-Walla.

On the east side of Upper Arrow Lake are the Halcyon Hot Springs where there is a large hotel with cottages for guests. The most considerable mountain is Halcyon Peak opposite, a trail leading to its summit. Other hot springs named St. Leon are on the same side of the lake, and 23 miles down near its lower end is Nakusp, where the C .P. R. Company builds its lake steamers. The situation of Nakusp is interesting to geologists, being built on the moraine of an old glacier. From here a branch railway runs to Rosebery on Slocan Lake, to Sandon and other towns in a rich silver-lead mining district, as far as Kaslo on Kootenay Lake across the country eastward. From West Robson, 59 miles below Nakusp, the Columbia and Kootenay Branch Railway follows the banks of the Kootenay River (good fishing water) to Nelson, connecting with a line to Procter on Kootenay Lake some 20 miles south of Kaslo. From Procter a steamer runs to Kootenay Landing south, to connect with the Crow's Nest Pass Railway. West Robson at the Columbia Bridge is a railway centre, connecting Trail, the great smelting town, with Nelson and Ross-

land and other mining towns. From West Robson, another branch runs through what is called the boundary country.

All this country south of Revelstoke is of extreme interest to capitalists, miners, farmers and sportsmen. It has been vigorously advertised by the Railway Company and by investors. But the tourist will be very well repaid in a hundred miles or more of as fine, and finer landscape of wooded mountain and valley and lake than can be found anywhere outside the Highlands of Scotland. Indeed, there is nothing in Scotland so expansive and at once so beautiful. More and more to this network of lakes and streams and valleys and dark hills will come the home-seeker from the Old World of mountains and glens and of English fields. And always it will remain a country of delight to the holiday-seeker and the tourist.

Goat's Beard (*Spiraea Aruncus*)

CHAPTER VII.

GLACIERS OF THE SELKIRKS.

(From a Monograph by A. O. Wheeler)

Structure: In popular terms, a glacier is a river of ice draining a rock-basin above filled to overflowing with ice and snow and technically known as névé or firn but popularly called a snowfield. The area of the Illecillewaet Snowfield is about 10 square miles, but there are many smaller in the Rocky Mountain system and some much larger, notably in the north, to wit, the Columbia Snowfield roughly estimated to cover 200 square miles at a mean altitude of 10,000 feet.

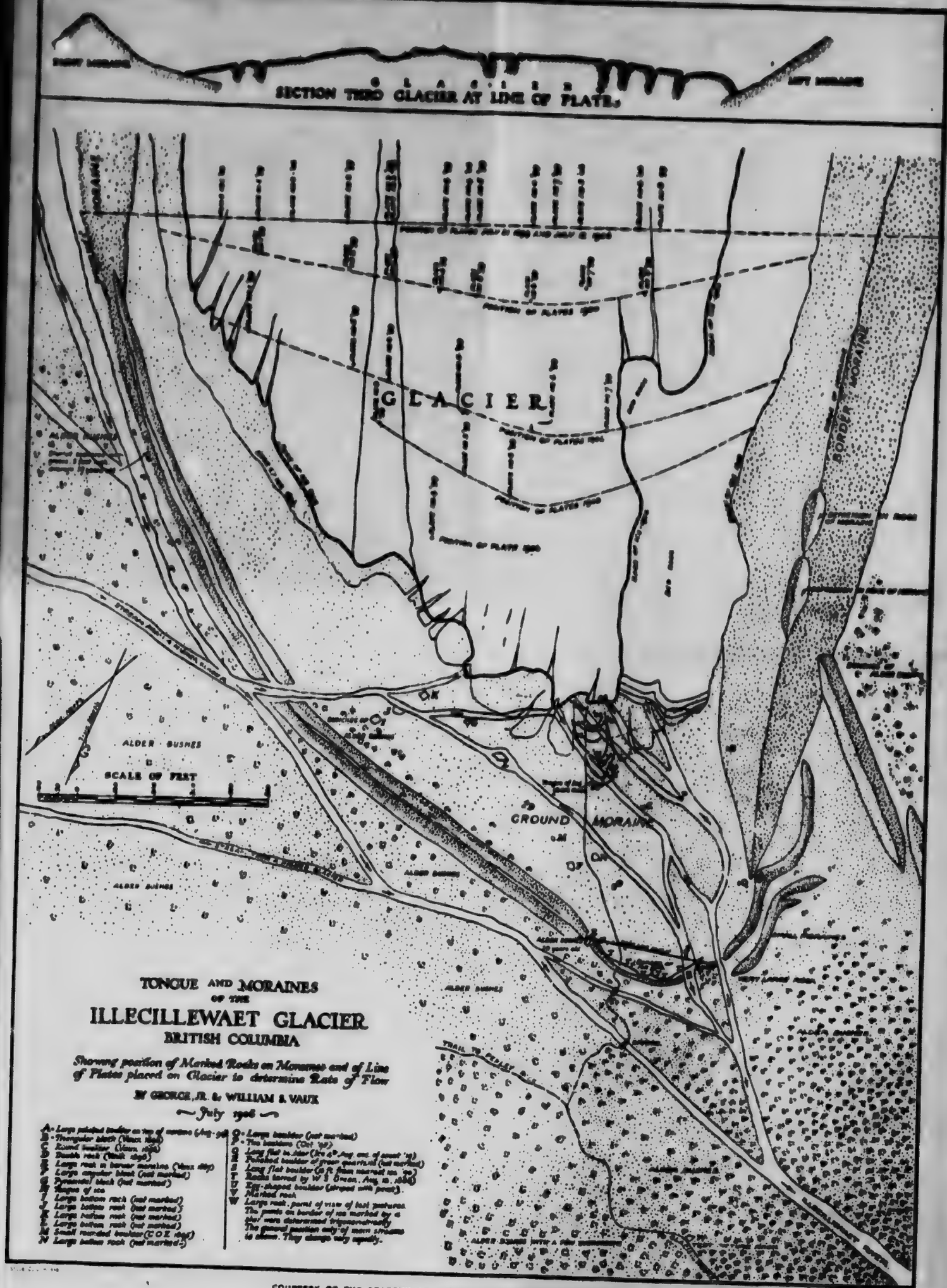
In these high regions, the heavy precipitation is always in the form of snow which keeps the great rock-basins full to overflowing. The prodigious weight of the mass compacts the undersnows into clear crystal ice. To illustrate: if you take a handful of snow, squeeze it until it becomes a transparent crystal and then let it freeze, you have the counterpart of glacier-ice.

This overflow pushed slowly down the mountain by the enormous pressure from above constitutes the glacier — *is* the glacier. Its upper part is covered with snow, and its lower part, where the warmer air melts the surface-snow, is exposed ice. This is the "ice-fall" and, in contrast to the snow-covered part, is called "dry-glacier". Heat and cold, contraction and expansion, and the unevenness of the bed over which it moves downward, cause large cracks to occur across the ice-river. They are of all sizes and are called crevasses. Sometimes they cross each other, and the result is that when the pressure from above closes the cracks, great ice-pillars of fantastic shapes, called seracs, are formed. The flow of a glacier is just like that of a river: the centre of the stream moves faster than the sides or bottom; while on a curve the outside edge flows more rapidly than the inside. Again, at a narrow place, the flow is faster and the glacier is broken and cracked, resembling the broken water of a rapid.

Moraines are the piles of mud, rock, and loose boulders always along the sides, at the end (tongue, snout or forefoot), and sometimes in the middle of a glacier; and called respectively lateral, terminal and medial moraines. The materials of which they are formed have fallen from surrounding cliffs and, through the course of ages, have been carried by the glacier and deposited in their places in somewhat the same manner as a rapid stream or river deposits along its shores driftwood and detritus; only the flow of the glacier is very, very slow, a few feet in the year, and the process of piling up has taken ages. If the rate of the flow of the glacier over its rocky bed, caused by gravitation and pressure from above, is greater than the annual loss by melting during the summer, the glacier is advancing; if less, it is retreating.

In 1898 a supplementary minute-book was opened at Glacier House for the purpose of recording matters of general scientific interest. Among the first entries made is a general statement by the late Wm. S. Vaux, Jr., of the series of investigations carried on by himself, his brother and Miss Vaux in connection with the

TO ACCOMPANY PAPER WRITTEN BY GEORGE VAUX, JR. AND WILLIAM G VAUX FOR THE CANADIAN ALPINE JOURNAL



COURTESY OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA

movement, rate of flow, and general change of appearance of the Illecillewaet and Asulkan Glaciers.

It is aimed in this statement, illustrated by photographs and a map, to supply information that will enable interested visitors to make intelligent observations carrying them on from where they were last left off, and so to enter their records in the book.

The Illecillewaet Glacier.

The investigations carried on by Messrs and Miss Vaux deal chiefly with the two principal movements of glaciers—the rate of flow and the advance or retreat of the forefoot. The third study dealing with changes in the general appearance of glaciers is best conducted by means of photographs taken year by year from the same position.

The Messrs and Miss Vaux began observations on the Illecillewaet Glacier on July 16, 1887, and took a number of photographs, now of special interest and value. At that time the forefoot came down to within 20 feet of the alder bushes; and a great mass of ice with steeply sloping sides covered what is now a long stretch of bare moraine. The general conditions then pointed to a recent period of advance.

In 1888, Mr. W. S. Green and the Rev. H. Swanzy included in their topographical survey some observations on this glacier. Holes were bored in the ice and a row of poles set up. Twelve days afterwards, all the poles had fallen, owing to the surface melting at their bases. The bottom of the holes was found in a few cases, the poles set up and observations taken. It was then ascertained that a pole near the moraine had in twelve days moved seven feet, one further out ten feet, and one in the centre twenty feet. From two rows of boulders dropped in front of the snout, it was deduced that the glacier had retreated about sixty feet during that past year, and from the inner row within that present year (1888). Mr. Green concluded his observations by tarring some of the boulders in closest proximity to the ice, so that the future retreat might be observed by other travellers. (W. S. Green's "Among the Selkirk Glaciers.")

In 1890 Mr. Harold W. Topham also made some observations on the same glacier, and at the close of his article in the Alpine "Journal" (May, 1891) makes the following request:—"In conclusion, I will ask any one intending to visit the Selkirks to obtain from me certain data, which will enable him to continue the observations which I commenced for the measurement of several of the glaciers."

In 1894, the Messrs. Vaux renewed their observations and with few omissions have continued them regularly until the present (1911).

In 1899, Mr. W. S. Vaux made an instrumental survey of the Illecillewaet Forefoot and its vicinity, and published a map. The copy here reproduced, which is corrected to July, 1906, will be useful in all future observations. At the time of this survey eight metal plates were placed in line across the glacier at right angles to its flow, where it was about one-third of a mile wide.

A base of 229 feet 6 inches was then measured on the high

The Illicillewaet Glacier (Black line on rock shows where the ice rested in 1887)

Tongue of the Illicillewaet Glacier (1898)

right-hand moraine about 1,000 feet above the snout of the glacier, a transit-theodolite set up at each end, and readings taken to each plate. A base also of 334 feet 6 inches was measured on the ground moraine in front of the forefoot and a number of points fixed by readings from both ends. In addition, the relative positions of a number of marked rocks, and rocks for future reference were located. (See map.)

As a result of observations made at intervals from 1899 to 1906, it has been computed that the average greatest daily movement of the ice down its bed, is 5.9 inches, or 179.4 feet per year.

On the map, directly in front of the most advanced portion of the ice-forefoot, will be noticed a rock marked "C". From this rock yearly measurements have been made to the nearest ice. The table below shows the annual recession from 1898 to 1910.

Illecillewaet Glacier—Recession of Tongue of Ice from Rock "C".

Date of Observation.	Distance Tongue of Ice to Rock "C"	Recession of Ice since previous year.	
August 17, 1898	60 ft.		
July. 29, 1899	76 ft.	16 ft.	
August 6, 1900	140 ft.	64 ft.	
August 5,1901	155 ft.	15 ft.	
August 29, 1902	203 ft.	48 ft.	
August 25, 1903	235 ft.	32 ft.	
August 14, 1904	240½ ft.	5½ ft.	
July 25, 1905.	243 ft.	2½ ft.	
July 24, 1906	327 ft.	84 ft	
August 12, 1907	316 ft.	11 ft.	Advance
September 26, 1908	355 ft.	39 ft.	Recession
August 21, 1909	366 ft.	11 ft.	"
August, 1910	426 ft.	60 ft.	"

The Asulkan Glacier.

Observations taken on the Asulkan Glacier by the Messrs. Vaux were on the same lines as those on the Illecillewaet, but they have not been continuous and no attempt was made to measure the rate of flow until 1906. In 1901 there was a distinct advance which continued for about three years when recession began again. This advance interfered with the observations, the large boulders in the moraine marking the datum-line being shoved forward by the advancing ice and entirely obliterating the base-line used for measurements.

The average greatest daily motion of the ice has been computed at 6.7 inches, or very nearly 204 feet per year. It was found on the 21st August, 1909, that the advance had been so great as to obliterate the marked rocks that had been used since 1899.

The Illecillewaet and Asulkan Glaciers are the only two on which measurements and observations have yet been taken, owing, no doubt, to their accessibility from Glacier House. Many glaciers of approximate magnitude difficult of access, offer most interesting studies, among them the Bonney, Rogers, Geikie, Deville, Grand, Beaver and Duncan Glaciers.

The Selkirk Glaciers are comparatively small but very numerous. They are remarkable for their purity and are not, as a rule, defaced by moraines or covered by rock debris. Particularly remarkable are the vast number of hanging glaciers. Along the heads of the high valleys they are found lining the sides, and are strikingly beautiful in the labyrinthine structure of their crevassed surfaces, which from a distance resemble a creamy film of lace-work enshrouding bare rock. Compared with the great glaciers of Alaska, of the Himalaya, and of other great mountain systems, they are puny; but even so, they have distinctive features all their own that give them a prominent place in the study of those parts of the earth that are covered by ice.

A NOTE ON THE GEOLOGY OF THE SELKIRK MOUNTAINS.

The Geological Survey of Canada has done very little work in the Selkirk Mountains, and the only report on them was made by Dr. Dawson about twenty years ago. Following the C.P.R. from west to east there are first about seventeen miles of very ancient rocks, granites and gneisses of the Archaean. These rocks, with the nearer parts of the Gold Range to the west represent the old nucleus or "protaxis" of the western ranges. They probably formed an important mountain range in the earliest times, but being so old, have suffered the penalty of age in mountains and have been greatly cut down.

Following the granites, eastwards there are 15,000 feet of dark slate and schist, once muddy sediments on a sea bottom, now thrown into folds, first a syncline or downward fold, afterwards an anticline or upward fold. Then come lighter colored series of quartzites and conglomerates, often schistose with the shimmer of mica scales. Near the summit these rocks make a syncline, but toward Beaver Creek they have been bent into an anticline and broken across by a great fault. The thickness of these rocks Dr. Dawson puts at 25,000 feet.

Coming out towards Donald there are later rocks (Cambro-Silurian) also folded and transformed largely into lustrous slates.

Fossils are so rarely found in the Selkirks that the age of these thick deposits is quite uncertain. Dr. Dawson calls everything Cambrian between the granite and the eastern Cambro-Silurian.

The granite and gneiss of the western Selkirks are very ancient eruptive rocks, highly crystalline and formed far below the surface. It is rather remarkable that there are very few undoubted eruptive rocks farther east and none along the line of the railway. In the Gold Range to the west there were great volcanic eruptions with lava sheets and thick beds of ashes after the Selkirks had been elevated, and there are important volcanic areas in the southern Selkirks, toward the Boundary.

As the Selkirks are a very old range, far older than the Rockies, they have undergone much destruction, and the great glaciers of the Ice Age had much to do with the moulding of the slopes and valleys, and the carving of the beautiful lake basins. (Dr. A. P. Coleman, in the Canadian Alpine Journal.)

THE SNOW-SHEDS OF THE SELKIRKS.

Owing to the heavy precipitation and consequent enormous accumulation of snow during the long winter, on the mountains of the Selkirks, the avalanche is a distinct danger to the railway in the narrower valleys and passes. In the spring the snow may weigh almost 50 lbs. per cubic foot, and very little will start an avalanche. Its powers of destruction are terrible. Therefore, wherever there is exposure, the track is protected by snow-sheds. Albeit built for stern utility without regard to beauty, their achitecture is of interest. Indeed, looking through the long vista of an interior, the lines of its rafters are not unbeautiful.

There are five types of snowsheds. (1) If the surface is at a steep angle the uphill side is held by a retaining crib of cedar logs. The rafters are supported by one end of this crib, and the other end is carried by a framed bent, the middle of the rafter being supported by struts. As a rule, the bents are five feet apart between centres, but at places where unusually severe avalanches may be expected, the distance is reduced to four. Shed rafters are usually of Douglas fir and are 12 by 15 inches in size, the plumb and batter posts being 12 by 12. The bents are supported either by piles or mud sills.

The second type is made to suit a flatter slope. The crib is only carried up half way, and a framework of posts and rafters is built on top. In the third type the crib is omitted altogether. In the fourth, known as the "valley-type" and built to resist avalanches from either side, the cribs are built on both sides and the rafters laid directly across. The fifth type is used for those places where the track is cut out of the hill-side and where the avalanche must fall nearly vertically on the snowshed. Its rafters are trussed and the sheds more strongly built.

As snowsheds are subject to fire, ample fire protection is provided. There is a complete system of piping throughout, and the shed itself is broken into short lengths separated by fire-breaks. These breaks are covered by split fences made of heavy V-shaped cribs to guide the slide over the adjacent sheds. There is also a thorough system of patrol and should fire break out a watchman would be on the spot speedily.

There are altogether six miles of snowsheds from six miles east of Rogers Pass to fifteen miles west of Revelstoke in the Gold Range. The average cost of building is some $40 a foot.

CHAPTER VIII.

THE ALPINE CLUB OF CANADA.

The coming of the Railway was the advent of mountaineering in the Canadian Alps. In 1888 there were no climbers in Canada who climbed for climbing's sake. There were, however, certain civil engineers and topographers who climbed laboriously and heroically, without Swiss guides and with scarcely any of the equipment now common among our climbers. Every mountain was a virgin peak and dangerous to men unskilled in snow-craft, ice-craft or rock-craft, who, nevertheless, carried transit and camera on their shoulders up the perilous cliffs while making topographical surveys for the Dominion Government. Notable among them was Mr. J. J. McArthur, who had charge of the Mountain Topography from 1886 to 1892. His name is associated with a beautiful blue lake 7,359 feet above sea, in the lap of Mt. Biddle near Lake O'Hara, and with a high mountain in the Gold Range. Mr. McArthur's achievements cover thrilling experiences. A gap would be filled in the annals of Canadian climbing if he would but write out the stories now hidden between the lines of his official records in Government Blue Books.

But all this so important climbing was work and not play. Climbing for pay and paying for climbing are not the same. "I climb because I must," says one; "I climb because I love it," says the other: each phrase an apologetic, supremely terse and unanswerable. And though mountaineering as a sport—now and always the sublimest of all sports—followed the railway, which ran hard by group after group of unknown attractive alpine peaks, Canadians were not of it. True, in 1883, occurred that picturesque incident on the summit of Rogers Pass, when a Canadian Alpine Club was organized with three members, a president, secretary and treasurer; one resolution was passed of thanks to the discoverer of the pass, another that its first activity should be the conquest of Mt. Sir Donald; and the Club's health then drunk in a sparkling streamlet at their feet. The officers were, in order, Sir Sandford Fleming, the late principal Grant and Mr. S. Hall Fleming. Though a bit of a frolic in the pause of the hardships of mountain travel without even a trail—and unless you know devil's club and the jungle mixed with its forests you know nothing of trailless travel in the Selkirks—the perspective of the years now shows that prophetic episode in a fine glamour.

The railway fairly in operation, news of virgin ground in Canada, whose mountaineering potentialities appealed to the imagination of climbers eager for new peaks to conquer, reached the Alpine Club of England, the Swiss Alpine Club, and the Appalachian Club of Boston. And for years the Canadian mountains were exploited by climbers from other lands, though, owing to its nearness, the American climbers came oftenest and achieved most in actual climbing. Here and there a Canadian began to climb for love of it, but the new century was a half-decade old ere the full meaning of these mountains and of mountaineering gripped their minds and hearts. After a climb or an excursion revealing some new peaks and distant snowfields, there would be ardent talk about an alpine club. Mr. A. O. Wheeler whose whole heart was in the glaciers and peaks of the Selkirks, felt the reproach of it to Canadians. And so did one

other who was wont to come to the mountains for inspiration and refreshment. Others, too, there were; but these two talked much about it, one of them putting the reproach into bold print on every possible occasion. Our American friends, who had meanwhile organized an American Alpine Club, were keen to have us organize a branch or an affiliated club. Canadian indifference being so apparent and our mountains being debtors to the American Club, Mr. Wheeler was minded to organize on that basis. It was pointed out to him that, once a movement was started in the interest of an independent Canadian mountaineering club, Canadians would wake up in the way John Bull wakes up if he is hardly and persistently shaken. And a circular was sent to certain University men and persons proper to the scheme, containing a number of questions, notably two: "Are you in favor of the Alpine Club?" "If so would you support a branch of the American Alpine Club, or an independent Canadian Club?" There was a common response. The C.P.R. Company gave passes from Vancouver to Halifax, and there gathered in Winnipeg on March 27, 1906, on the resolute, level plains a thousand miles from the field of operations, a company of enthusiasts. The charter members numbered 79, among them four from the American Alpine Club. The large and warm response was a rebuke to our accusation of Canadian apathy. But no doubt the appeal was made at "the psychological moment"—when the young nation was beginning to feel its own potential strength; when the word, Canada, was becoming big with meaning; when the "Strathcona Horse" had strengthened the cords of Empire.

From the first, Mr. Wheeler's amazing energy and capacity for work have been manifest in the growth of the Club. To-day (1911) its membership is nearly 600. From the first, both English and American climbers were keenly interested, many of them joining the young club which took the dignified name, Alpine Club of Canada, and thus pre-empted a national appellation. From the first, again, it has been pre-eminently a club for making mountaineers, which differentiates it from the older conservative clubs whose qualifications for membership demand skill and experience in the sport. To show the objects and scope of the Club the constitution is appendid.

An outstanding feature of the A.C.C. is the annual meet in some strategic situation where graduating members may qualify for active membership and where observations may be made on the action of glaciers. It is, in short, a school for mountaineering, for mountain study, and for mountain photography and painting. Swiss guides are in attendance and experienced climbers give their services freely. The first meet was in 1906 on Yoho Pass when 100 members were in camp and when seven high mountains (one a virgin peak) were climbed by successive parties, 44 graduating to active membership. The experiment became an institution; and successful camps, one with an attendance of 175, have been held at Paradise Valley, Rogers Pass, Lake O'Hara, Consolation Valley and Sherbrooke Lake, with auxiliary camps at other climbing rendezvous.

These camps are the life and soul of the Club, and the campfire has been finely termed its altar and hearthstone. They last from one to two weeks, and in time no doubt they will last throughout the climbing season. Every day parties are conducted to mountain-

Around the Camp Fire

tops, to high passes, to glaciers and distant valleys; and every night brings to the giant fireside a weary but happy company, keen to hear some new adventure of the heights. Here, climbers from the Alps, the Caucasus, the Ruwenzori, the Himalaya and other mountain regions have told their tales to listening ears, giving both knowledge and inspiration. It is an unforgettable picture that of the camp-fire with its huge red coals glowing, its flames flapping and its myriad sparks flying upward in the velvet darkness, the guardian mountains standing round about, and the forests silent with the essential silence of windless night; and over all, the silent starry sky. The only sound in these remote nooks of the mountain wildernesses is the sound of human speech and song.

Every year sees mountaineers and travellers of ripe experience under canvas as members of the A.C.C. Dr. Longstaff, whose name is a household word in mountaineering circles the world over, has actively identified himself with the Canadian Club and has heartily given his services in this enterprise of making mountaineers of young Canadians.

Some tribute is due to the lady climbers, who have always "made good" on glacier and peak. The unfailing record is of pluck, endurance, and of those qualities that go to make successful mountaineers. Miss Canada is a "lady of the snows" indeed, and of mountain summits where blow the exulting gales.

The Club has its Club House at Banff, situated among the pines on the side of Sulphur Mountain, some 250 feet higher than the C.P.R. Hotel, where there is an unrivalled view of the Bow Valley and the surrounding mountains. The house is handsome and commodious with wide verandahs, and contains on the first floor, a large assembly room with French windows, offices, a cosy hall, kitchen, and large canvas-covered dining-room annexed; on the second floor, library, smoking-room, and apartments for those in charge. The sleeping accommodation is in tents furnished with all necessaries except bedding. The Club House is open from early June until late September, and the rates are $2.00 per day. Only members of the Club are accommodated. No doubt when Banff becomes a resort for winter sports and the membership warrants, the place will be enlarged and kept open during the year.

From the valley below, the Club House, with its red roof and white tents, shows picturesquely and conspicuously in the forest on the face of the mountain. It is on the high road to the Government Baths from where the wide pony-trail leads to the summit; and about three-quarters of a mile away is the Middle Sulphur Spring, still without a bath-house. There is plenty of good rock-climbing in Banff including some outstanding mountains, among them Mt. Aylmer (10,364 ft.), Mt. Cascade (9,625 feet), Mt. Rundle (9,665 ft.); and Mt. Edith (8,370 ft.) up the railway line. Altogether, the Club House and its beautiful situation, its spacious rooms and cosy fireplaces, is a pleasant place of rendezvous for the Club, and delightful evenings with story and song and dance are spent there by members coming from East and West, from the Old Country and the New.

The Alpine Club has given an immense impetus to mountaineering among Canadians, and it bids fair to become a national sport.

This it ought to be, considering that Canada has the two factors necessary—and a third which is more than a *tertium quid*, even ample railway transit over the long distance from east to west. The two factors are mountains and men. Her alpine territory covers an enormous area; her people are made of the flesh-stuff and soul-stuff that go to the making of mountaineers. Leave Time and the Alpine Club alone, and the consummation, greatly and devoutly wished by many will be accomplished. E. P.

CONSTITUTION

1. **The name of the Club shall be "The Alpine Club of Canada."**

OBJECTS

2. **The objects of the Club are:**
(a) **The promotion of scientific study and exploration of Canadain alpine and glacial regions.**
(b) **The cultivation of art in relation to mountain scenery.**
(c) **The education of Canadians to appreciation of their mountain heritage.**
(d) **The encouragement of the mountain craft and the opening of new regions as a national playground.**
(e) **The preservation of the natural beauties of the mountain places and of the fauna and flora in their habitat.**
(f) **The interchange of literature with other alpine and geographical organizations.**

WORK OF THE CLUB

3. **The work of the Club shall be:**
(a) **The exploration and study of Canada's alpine tracts; and, with this end in view, it shall gather through its members literary material and photographs for publication and dissemination, and such publications shall be placed on record with the Secretaries and Librarian and be distributed to the members of the Club and to corresponding organizations.**
(b) **The promotion of the study of glaciers and of glacial action in Canada, and of art and literature as applied to mountain regions, for which purposes glacial, art and literary sections shall be formed.**
(c) **The organization of a corps of reliable guides and outfitters who shall be available in connection with the work of the Club.**
(d) **The sphere of action of the Club shall not be confined to Canada alone, but may extend to all the high mountain ranges of the world, and one of the objects of this organization shall be to obtain information concerning other alpine regions and to come closely in touch with those who are interested in all such matters.**

MEMBERSHIP

4. Membership shall be of five grades, viz.:
(a) **Honorary Members.** Those who have pre-eminently distinguished themselves in mountaineering exploration or research and in the sacrifice of their own interests to the interests of the Club shall be eligible for Honorary membership. Honorary members shall be elected only by a two-thirds majority of the recorded votes of the Club.
(b) **Active Members.** Those who have made an ascent of a truly alpine, glacier-hung peak rising at least two thousand five hundred feet, (2,500 ft.) above the timber line of its region; their eligibility for election to be decided by the Executive Board.
Persons who are distinguished in literature, science or art relating to mountains, including alpine exploration or travel, shall be eligible for election to Active membership; their eligibility to be decided by the unanimous vote of the Executive Board.
Except as hereinafter specified, Active members only shall be entitled to vote.
Active members may obtain life membership by the payment of fifty dollars, and shall thereafter be exempt from the payment of all dues.
(c) **Associate Members.** Those who are unable to qualify as Active members, but owing to the objects of the Club, desire to affiliate therewith and lend a helping hand towards its maintenance.
(d) **Graduating Members.** Those who desire to become Active members but are not yet qualified. They shall be allowed to attend two annual camps, but fail-

Five O'clock in the Morning. Climbing Orders

A. C. C. Guide and Miss Canada

ing qualification at the end of the second camp, their names shall be dropped from the roll of Graduating members. They shall have the option of becoming either Associate or Subscribing members.

(c) **Subscribing Members.** Those who are unable to take an active part in the outdoor work of the Club but desire to keep in touch with it by receiving its publications and exchanges.

EXPULSION OF MEMBERS

5. The Executive Board shall have power, by a unanimous vote of all its members to expel from the Club any member for such cause as shall in its opinion justify its action; provided that due notice of the charge has been sent to the member in question, to his or her last address known to the Club, and a reasonable opportunity of defence afforded and a formal statement of the case made to each member of the Board. Any member so expelled shall have the right of appeal to an Annual or General Meeting of the Club.

OFFICERS

6. (a) The officers of the Club shall be: A President, Vice-Presidents, an Hon. Secretary, an Hon. Treasurer, a Director, a Secretary-Treasurer and a Librarian, who shall be elected to office biennially.

(b) The President, Vice-Presidents, the Hon. Secretary and the Hon. Treasurer shall not hold office for more than two consecutive terms; the provision as to the last two officers to date from the election of officers held in 1910.

(c) Officers of the Club shall be elected from the Active membership, but if it be distinctly in the interests of the Club as determined by the Executive Board, they may be elected from any other grade except that of Graduating or Subscribing membership, and for their term of office shall be vested with the powers and privileges of Active membership. In such case, however, the election must be by a two-thirds majority of the recorded vote of the Club.

ADVISERS

7. (a) There shall be elected not less than three advisers. Their tenure of office shall be governed by subsections (a) and (b) of section 6, entitled "Officers."

(b) Advisers may be elected from any other grade, excepting that of Graduating or Subscribing membership, and for their term of office shall be vested with the powers and privileges of Active membership.

EXECUTIVE BOARD

8. The Executive Board shall be composed of the Officers, Advisers and not more than seven Chairmen of Local Committees. It shall have the general charge superintendence and control of the affairs, property and interests of the Club. It shall pass upon the eligibility of all proposed members and shall arrange and direct the working details and publications of the Club. The Executive Board shall have power to make by-laws for its own government, not inconsistent with this Constitution, which by-laws shall be submitted by the Board at the first Annual Meeting thereafter.

"Except in the case of Chairmen of Local Committees only residents of Canada shall be eligible for office upon the Executive Board."

DIRECTOR

9. (a) The Director shall be elected in a similar manner to other officers of the Executive Board, and shall be responsible to the said Board.

(b) He shall hold office continuously and shall only be removed therefrom by a vote at an Annual Meeting, or by resignation of his office.

(c) He shall assume the management of all business, property and other interests of the Club, and shall be responsible for such management to the Executive Board.

(d) He shall be furnished by the Executive Board with such staff as it may consider necessary to carry on the affairs of the Club, and for which the Club can provide salaries.

(e) His salary shall be fixed by the Executive Board.

(f) The Executive Board shall have power to suspend the Director from office for cause, but such action must be sustained by vote at an Annual Meeting. If not sustained it shall be inoperative as regards his salary during the term of suspension.

(g) In case of such suspension the Executive Board shall assume the duties of the Director, and shall make provision for their continuance in such manner as may be to the best interests of the Club.

LOCAL COMMITTEES

10. (a) Local Committees may be formed for any Country, Province or City, where, in the opinion of the Executive Board, there are sufficient members in touch with one another to make such a committee desirable.

(b) Local Committees shall consist of a Chairman, a Secretary, and not less than two, nor more than six, other members, who shall be elected annually at a meeting of the members in whose interest such committee is organized.

(c) Local Committees shall have the power to pass by-laws for their own governance.

(d) For the purpose of full representation, the Chairmen of not more than seven Local Committees may be elected to the Executive Board at the same time and in the same manner as other officers of the Club.

NOMINATION AND ELECTION OF MEMBERS

11. (a) Every nomination for membership must be made by not less than three members of the Club. Such nomination, with a statement of the qualifications of the proposed member, shall be submitted to the Executive Board, which shall pass upon the eligibility of the candidate. A ballot containing the names of such candidates as have been approved by the Executive Board, together with a statement of their qualifications and the names of their sponsors, shall be sent by the Secretary-Treasurer to each Active member. Such ballots as are returned to the Secretary-Treasurer within six weeks after they were sent out shall be canvassed by the Executive Board and the result declared in the minutes of the Board and in the next circular issued to members. Five adverse votes on an election shall disqualify for membership. This does not apply to Honorary members, who shall be elected by a two-thirds majority of the votes recorded.

(b) No candidate shall be eligible for election who has not attained the age of eighteen years.

NOMINATION AND ELECTION OF OFFICERS

12. (a) The election of officers shall take place at every alternate Annual Meeting. Two months before such meeting, the President shall appoint a Nominating Committee of five Active members. This Committee shall prepare a list of candidates for the ensuing term and report it to the Secretary-Treasurer.

(b) A ballot containing these nominations shall be mailed to each Active member at least six weeks before the date of election. At the meeting appointed for the election, these ballots shall be cast and the result declared. In case of a failure to elect, the existing officers shall hold office until their successors are elected by special ballot cast for such purpose.

DUES

13. (a) Annual dues for Active membership shall be five dollars.
Annual dues for Associate members shall be twenty-five dollars.
Annual dues for Graduating members shall be two dollars and fifty cents.
Annual dues for Subscribing members shall be two dollars.

(b) Members in arrear for two years, to whom have been mailed the usual notice for dues and a final notice, shall forfeit membership but the Executive Board shall have power to reinstate such members at its discretion on payment of all arrears.

HEADQUARTERS

14. The Headquarters of the Club shall be at Banff, in the Rocky Mountains Park of Canada.

ANNUAL MEETING

15. An Annual Meeting of the Club for the election of officers and the transaction of other business shall be held at the Club's summer camp or, failing a summer camp, at the Club's headquarters during the months of July or August.

QUORUM

16. Seven Active members shall constitute a quorum of the Club for the general transaction of business, and three members of the Executive Board shall constitute a quorum of that Committee for the general transaction of business.

SUMMER CAMP

17. A summer camp in some suitable part of the mountain regions shall be organised in each year for the purpose of enabling Graduating members to qualify for Active membership, and the members generally to meet together for study and climbing in the alpine districts of Canada.

BADGE

18. The Badge of the Alpine Club of Canada may be bestowed for achievement in mountaineering or for distinction in literature, science or art relating to mountains, including alpine exploration or travel.

(a) To be eligible for the Badge it shall be necessary:

(1) To be a Member of the Club.

(2) **For a Man.**—To have climbed during at least four separate seasons in some recognised alpine region of the world, and to have made during each of the said seasons at least one climb qualifying for Active membership. The number of seasons and climbs required rests with the Executive Board.

(3) **For a Woman.**—To have climbed during at least three separate seasons in some recognised alpine region of the world, and to have made during each of the said seasons at least one climb qualifying for Active membership. The number of seasons and climbs required rests with the Executive Board.

(b) The Executive Board shall have power by a unanimous vote to bestow the badge upon members of the Club who are distinguished in literature, science or art relating to mountains, including alpine explorations or travel, without other qualification.

(c) All claims for the badge shall be referred to the Executive Board and the title to it shall be subject to acceptance of the said claims by the Board.

SPECIAL MEETINGS

19. Special meetings of the Club may be called by the President or by a Vice-President and the Hon. Secretary, acting under his authority. In such case due official notice shall be mailed to all members six weeks before such meeting, stating the purpose for which it is called.

LIBRARY

20. A library or libraries shall be established where the publications of the Club and books, maps, photographs and works of art relating to mountain scenery shall be gathered together and filed for the use of its members.

AMENDMENTS

21. (a) Amendments to the Constitution and By-Laws may be made at any regularly called meeting of the Club, provided that such amendment or amendments shall have the signatures of not less than five Active members of the Club and are acquiesced in by two-thirds of those recording their votes.

(b) All such amendments shall be mailed by the Secretary-Treasurer to the members, on printed ballots, six weeks in advance, together with the names of the five members proposing the change. Such ballots as have been returned to the Secretary-Treasurer shall be canvassed by a committee appointed by the President and the result declared at the meeting aforesaid.

A corner of the Club "House" giving a glimpse of the Bow Valley below and the mountains beyond

CHAPTER IX.

A NOTE ON THE VEGETATION OF THE SELKIRKS

(Drawn chiefly from the Monograph by Prof. John Macoun, M. A. F. R. S. C., in "The Selkirk Range.")

We do not really know trees, says Ruskin, until we see them growing in multitudes in the contracted valleys of high mountains, climbing up the steep slopes, gathering into pleasant companies on the high meadows or "gliding in grave processions over the heavenward ridges." For it is here that their resources are developed, "rooting themselves in inhospitable rocks, stooping to look into the ravines, hiding from the search of glacier-winds, reaching forth to the rays of rare sunshine, crowding down together to drink at sweetest streams." Then he shows to every lover of forest landscape how great is the advantage of mountain over plain. And who that watches the mountain, has not been conscious of it. "Add to this charm of redundance that of clearer visibility,—tree after tree being constantly shown in successive height, one behind another, instead of mere tops and flanks of masses, as in the plains; and the forms of multitudes of them continually defined against the clear sky, near and above or against white clouds entangled among their branches, instead of being confused in dimness of distance."

These forests of the Selkirks grow with a tropical compactness in the valleys; and, unafraid of glacier winds, crowd upward in serried ranks to meet perpetual snows. Here grows the Giant Cedar (*Thuya gigantea*) often ten feet in diameter; the Cottonwood (*Populus balsamea*) also a large tree; Englemann's Spruce (*Picea Englemannii*) and other of the same species; two species of Hemlock, (*Tsuga Mertensiana*) common on the west coast and known by its small cones, and (*Tsuga Pattoniana*) a rare and beautiful tree, "more graceful in habit than the other and with larger cones;" also, Douglas Fir (*Pseudotsuga Douglasii*) the familiar tree growing throughout the whole mountain system. Other trees are two firs, *Abies subalpina and amabilis*, beautiful trees, the last growing with the *Tsuga Pattoniana* and *Pinus albicaulis* to altitudes over 6000 feet. Also, at timber-line in the Columbia Valley, grow splendid specimens of Lyall's Larch (*Larix Lyallii*) the most interesting tree of the mountain forests, and the most lovable.

The shrubbery and undergrowth are exceedingly rank in the valleys and on the lower slopes. Devil's Club (*Panax horridus*) or prickly aralia, is the lion in the way of every man who would blaze a trail through Selkirk valleys. "Imagine," says Mr. Wheeler, "a bare stick an inch thick and from five to eight feet high with a spread of tropical-looking palmated leaves at the top, set off by a bunch of bright red berries. The entire surface of the stick is covered by sharp, fine spines and the canes grow so close together that sometimes it a impossible to force a way through them without using an axe. The points of the spines break off in the flesh, causing it to fester and become very painful." Surveyors and prospectors reserved their most picturesque maledictions for this beautiful evil shrub. The unknowing tenderfoot, grasping its so apparent friendly aid to steady his steps on fallen trees, does not ever forget his surprise. Skunk Cabbage (*Lysichiton Kamtschaicense*) is another tropical-looking plant with large

bright green leaves and an offensive odor. It is the staple food of the bears in early spring. Alders, Willows and young Birch, bent by the snow avalanches and the weight of soft snow from the heavy precipitation, lie about breast high and obstruct the ascent. When wet they are very slippery and dangerous along the line of descent. Professor Macoun warns the unwary scrambler in a single sentence: "It is best not to investigate the shrubs of the ravines too closely."

Of flowering shrubs and plants within the Big Bend of the Columbia the Professor found over 500 species. It is only possible to name a few outstanding ones for beauty of bloom, using his own text chiefly. The White-flowered Rhododendron (*Rhododendron albiflorum*), mountain heather (*Bryanthus empetriformis*) with pink flowers and *Bryanthus glandulifera* with yellowish flowers; and the low-growing *Cassiope tetragona* with little white bells, often called heather, are beautiful and prolific in bloom. Larger flowering shrubs bearing berries include mountain elder (*Sambucus melanocarpa*) with bunches of white flowers and black fruit; honeysuckle(*Lonicera Douglasii*) with purplish flowers and large, juicy black berries; and many species of blueberries (*Vaccinium*) that furnish fruit for man and beast. Currants and gooseberries are occasionally found but raspberries grow and bear fruit plentifully on the sunny slopes.

The procession of flowers begins as soon as the snow melts in the lower altitudes, and continues throughout summer, many following the melting snows upward. A flower named Spring Beauty (*Claytonia sessilifolia*) was found in flower on the site of Revelstoke in May, and at Glacier in August of the same year, the difference in altitude being 2500 feet. The Dog-tooth Violet (*Erythronium giganteum*) sometimes called Avalanche Lily, a delicately lovely yellow flower, was found in prolific bloom at Sicamous in early April, and by the edge of the Asulkan Glacier in late August. In this case the difference in altitude would be nearer 4000 feet. It is exceedingly interesting to follow the flowers throughout the season, as they follow their summer upward by degrees from the level of the railway to the alplands above timberline. Bordering the same brooklets coming from the snow are many species of beautiful spring flowers blooming from early June to late August, according to altitude. Two species of Monkey Flower are noted; the large yellow-flowered *Mimulus luteus* and the taller, hardier *Mimulus Lewisii*, both growing near water. Wandering one August in the Gold Range above Griffin Lake at an altitude of 7000 feet, Professor Macoun came to a murmuring little brook bordered with this flower. Following its course, by and by he noticed that the music stopped, and upon examination found a ledge of rock only a few inches high protruding into the stream and upon its extreme edge a large bunch of Mimulus growing. On this the water flowed and pausing, divided into two streamlets, part falling down into Eagle River and on to the ocean by the Thompson and the Fraser; and part joining the Columbia to seek the sea by that single great river flowing south.

Professor Macoun enumerates with their scientific names and with descriptive touches many flowers according to their families. The Crowfoot family is found in all altitudes. There are two species of Columbine, *Aquilegia brevistylis* (Blue-flowered) and *Aquilegia flavescens* (red or yellow). Anemones are in three or more species, the Western

Alpine Anemone (*Anemone occidentalis*) is conspicuous in leaf and flower and fruit.

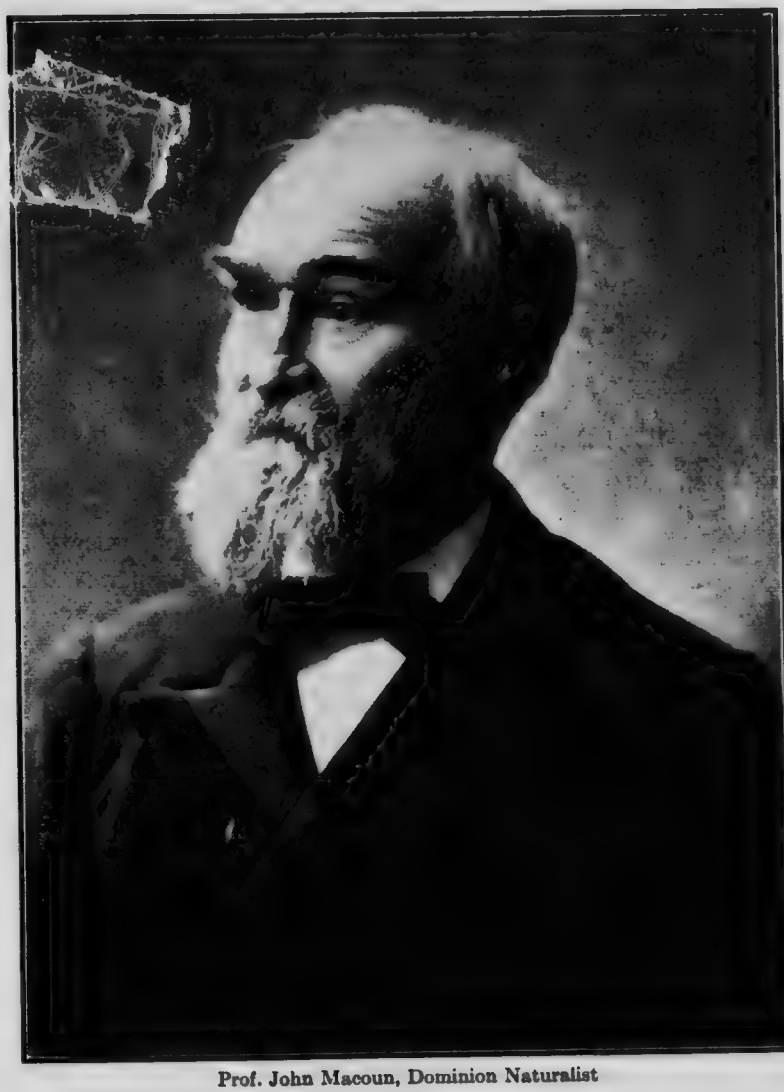
The American Globe flower (*Trollius laxus*) borders the brooks near the snow; these with the Saxifrages, Violets and other beautiful flowers grow in the ascending gardens throughout the summer. It is common to find the same species in seed, blossom and bud within 100 yards of altitude. One can pass through Winter, Spring, Summer and Fall in the descent of a few hundred feet. This is one of the many charms of botany in high mountains.

The Rose family takes "a first place" either in flower or in fruit. The Strawberry (*Fragaria*) and Raspberry (*Rubus*) grow profusely and are of fine flavor. Strawberries grow so thickly in places in the Columbia and Beaver Valleys that a pailful can be speedily gathered. Between Golden and Donald, about 500 feet above the river, are many such places. The Evening Primrose family is represented by numerous species as the Fireweed (*Epilobium augustifolium*), and the low-growing species with broad leaves and large purple flowers (*Epilobium latifolium*) found on gravel bars. Another species (*Epilobium luteum*) with large yellow flowers is found in the swamps around Rogers Pass, a rare and beautiful species.

The Composites, blooming lavishly in July and August, include Asters, Golden Rods, Ragworts, Everlastings, Thistles, Arnicas, Fleabanes. Everlasting (*Antennaria*) is the nearest to Edelweiss that grows in the Canadian Mountains. Doubtless if that rare and famous flower of the lofty Swiss altitudes were transplanted to the Selkirks it would take root.

Both the Monkey Flower and the Painted Cup (*Castilleia*) belong to the Figwort family. Altogether there are six species of the Monkey Flower, four being less conspicuous and showing only to the knowing botanist. Orchids there are, but not in profusion. The Moccasin Flower or Ladies' Slipper (*Cypripedium*) grows in three species, the most common being the Northern Ladies' Slipper (*Cypripedium passerinum*).

The Fern family is well represented in the Selkirks by the following genera; *Botrychium*, *Adiantum*, *Aspidium*, *Asplenium*, *Cryptogramma*, *Cystopteris*, *Onoclea*, *Osmunda*, *Pellaea*, *Phegopteris*, *Polypodium*, *Pteris*, *Woodsia*. Also two ferns, very rare in Canada, were found by Professor Macoun, growing on Mt. Avalanche.



Prof. John Macoun, Dominion Naturalist

A LIST OF THE MOST CONSPICUOUS PLANTS FOUND AMONGST THE SELKIRK MOUNTAINS

"Very beautiful are the flowers that bloom on the hill-slopes and in the valleys of the Selkirk Range. Wet-loving plants, such as the large yellow Musk (*Mimulus Langsdorfii*), the magenta Water Willow-herb (*Epilobium latifolium*), the bright Snow Buttercup (*Ranunculus Eschscholtzii*) are among the most noticeable flowers bordering the mountain brooks, and are found in company with the largest of the white Globe-flowers (*Trollius laxus*), the tall, scarlet and yellow Columbines (*Aquilegia formosa*), and clumps of Grass of Parnassus (*Parnassia montanensis, P. fimbriata*).

Beside the trails which thread the forests grow many kinds of Arnica (*Arnica cordifolia, A. Chamissonis, A. alpina*), their splendid golden rays sowing sunshine on the ground; Wintergreens (*Pryola asarifolia, P. chlorantha, P. secunda, P. minor*), Spring Beauties (*Claytonia sessilifolia, C. parviflora*) peep out at the edge of the melting snows, and *Leptarrhena pyrolifolia* rears its starry blossoms and later its handsome red seed-vessels on many a bank carpeted with Bunchberry (*Cornus Canadensis*), Wild Parsley (*Ligusticum apiifolium*), Alpine Spiraea (*Spiraea pectinata*), True Mitre-wort (*Mitella Breweri*, False Mitre-wort (*Tiarella unifoliata*) and Tellima (*Tellima grandiflora*).

Tall wands of Twisted-stalk (*Streptopus amplexifolius*) and False Solomon's Seal (*Smilacina amplexicaulis*) are mingled with the sweet-Smelling White Heliotrope (*Valeriana sitchensis*), and the magnificent pleated leaves of the False Hellebore (*Veratrum viride*); while flowering bushes of Goat's Beard (*Spiraea Aruncus*), Western Mountain Ash (*Pyrus sambucifolia*), Red-berried Elder (*Sambucus racemosa*), Woolly Labrador Tea (*Ledum latifolium*), Red-stemmed Dogwood (*Cornus stolonifera*), Devil's Club (*Fatsia horrida*), Bristly Gooseberry (*Ribes setosum*), Red Currant (*Ribes rubrum*), Smooth Menziesia (*Menziesia glabella*), and that exquisite Waxen-belled shrub, *Rhododendron albiflorum*, flourish beneath the shade of pine and hemlock. Blueberries are abundant, both *Vaccinium Ovalifolium*, a species having sweet berries covered with a rich purplish bloom, and *Vaccinium membranaceum*, whose berries have no bloom, being found in great quantities on the beds of snow-slides.

As one climbs to higher altitudes, the flowers grow more rare, but infinitely more precious. Here the large Beard-tongue, (*Penstemon Menziesii*), fresh-dipped in the purple vats of Tyre, is found in masses on the ledges of the cliffs; frail Saxifrages (*Saxifragia Lyallii, S. Nutkana*), nestle in the nooks between the stones; blue-eyed Speedwells (*Veronica alpina, V. serpyllifolia*) are set like jewels on the barren breast of the moraines, and Heath (*Cassiope Mertensiana*) and False Heathers (*Bryanthus enpetrifornia, B. glanduliflorus*) creep over and cover the rocks with their white and red bells, being found in abundance near tree-line. The lovely rose-pink False Heather (*Bryanthus intermedius*) first discovered in the Selkirks in 1901 by Mrs. Henshaw, is a more rare species. Among the last blossoms seen as one approaches the line of perpetual snow are the Dwarf Blue-bells (*Campanula arctica*), a large species growing singly on slender stems, yellow *Aplopappus Brandegei*, and the mats of the purple flower-starred Moss Campion *Silene Acaulis*), which is found at the immense elevation of 10,000 feet.

Yellow Adder's Tongue (*Erythronium giganteum*)

White-flowered Rhododendron (*Rhododendron albiflorum*)

Pale yellow Adder's Tongues (*Erythronium giganteum*) grow in great profusion in the alpine meadows, together with Indian Paint Brushes and Bright Painted-cups (*Castelleia septentrionalis, C. miniata, C. Bradburii*) of every hue—scarlet, carmine, orange, yellow and white—Wood Betony (*Pedicularis bracteosa*) and Queen-cups (*Clintonia uniflora*).

Among the other conspicuous plants are the Everlastings (*Antennaria racemosa, A. Lanata*), St. John's Wort (*Hypericum Scouleri*), blue and yellow Violets (*Viola cognata, B. glabella*), Yellow Willow-herb (*Epilobium luteum*), Creeping Raspberry (*Rubus pedatus*), Green Orchis (*Habenaria bracteata, H. obtusata, H. hyperborea*), Long-beaked Pedicularis (*Pedicularis Jroenlandica*), Cow-parsnip (*Heracleum lanatum*), Western Anemone (*Anemone occidentalis*), Alpine Anemone (*Anemone Drummondii*), and those two natives of many lands, the Northern Twin Flower (*Linnaea borealis*) and the Yarrow (*Achillea lanulosa*).

Big blue spikes of Phacelia (*Phacilia sericea*) and Mountain Larkspur (*Dephinium Brownii*), mark the path of the sun across many an upland garden when Nature has sown with a lavish hand bronze-tasselled *Thalictrums*, white and yellow Marsh Marigolds (*Caltha leptosepala, C. palustris*), primrose colored Columbines (*Acquilegia flavescens*), Potentillas, whose names are legion, and among which *Potentilla dissicta* is the most conspicuous, Gold-rods of which *Solidago multiradiata var. Scopulorum* is the most prolific, Ragworts (*Senecio*), Coltsfoots (*Petasites*), Hawkweeds (*Hieracium*), Hawksbeards (*Crepis*) and the pink-petalled Arctic Raspberry (*Rubus arcticus*); while to wander over an alpine field of Asters (*Aster Fremonti, A. Engelmanni*) and Fleabanes (*Erigeron salsuginosus, E. Acris*) is to tread upon a carpet close woven of purple and gold.

Other plants there are which flourish in the Selkirk Range less conspicuous than the foregoing, yet each in its own way very lovely, such as the *Arabis, Arenaria, Draba, Stellaria, Cerastium, Trientalis, Artemisia, Dicentra, Brassica*, and many more which it is impossible even to catalogue here."

Julia W. Henshaw.

BEASTS, BIRDS AND FISH OF THE SELKIRKS.

(Mainly from a Monograph by John Macoun, M.A., F.R.S.C., Dominion Naturalist and Botanist.)

Beasts.

Since the coming of the railway with its loud intermittent noises and the consequent invasion of the multitude, the big game of the mountains have retreated to less accessible recesses and heights. When Professor Macoun made his official expedition of 1885, black bears (*Ursus Americana*) and grizzly (*Ursus ferox*) were numerous in Rogers Pass and vicinity. The hunter must now seek this valuable mammal in remoter regions and with due heed to the game laws albeit it will be noted by reference to extracts elsewhere in this book, that there is no limit fixed to the number of bears a hunter may bag. The black bear is fond of the roots of skunk cabbage (*Lysichiton Kamtschatcense*) and in Spring he may be found feeding in the valleys where it grows. In summer he frequents the higher slopes where the huckleberry shrub (*Vaccinium*) is his staple nourishment. The Caribou (*Rangifer caribou*) and Mountain Goat (*Haplocerus mountanus*) roam on their feeding grounds in the alpine meadows above timber line. Adjoining the Upper Columbia, there are certain high pastures frequented by both Goat and Sheep (*Ovis montana*). Caribou abound in the mountains east of the Beaver Valley, and in the Gold Range, and are found in many of the Selkirk Ranges. These animals delight in the high meadows above the timber where they feed in Summer and Autumn. Within Glacier Park and within all the Government Reserves, hunting any animal or bird whatsoever is forbidden.

The Mule Deer (*Cervus macrotis*), plentiful on the lower slopes of the Columbia, were once so trustful that anyone might come near them. Now, says Professor Macoun, "it is pitiful to see the change" when the sight of a man sends them flying in fear.

Coming to the smaller mammals, there is the larger Marmot or Whistler (*Arctomys Columbianus*) whose habitat is about or above timber line among the broken rocks at the base of the high slopes. Among all the denizens of the hills, the Whistlers are best known to visitors who are often startled on the higher trails and alplands by their piercing whistle. Professor Macoun used to answer thinking it a call from his own kind. It sounds exactly like that shrill far-penetrating whistle contrived with various aids by the human boy. The Whistler sleeps all winter in his nest under the rocks. In summer he sits in the sun on a warm rock or wallows in a shallow pool near by. He is an interesting little animal well worth watching, but the watcher must take care to be very still, and had better be on the slopes above. Shortly in the silence "the mountain will be alive with noise and movement," says Professor Macoun.

Two smaller species of marmots are Say's Squirrel (*Spermophilus lateralis*) the size of a large chipmunk, its head larger and its legs shorter than those of an ordinary squirrel; and Parry's Marmot (*Spermophilus Parryii*), smaller and of a deep yellowish grey where the other has a broad white stripe bordered with brownish black.

The Little Chief Hare (*Lagomys princeps*) is a remarkable little

animal living among the loose rocks at the bottoms of slopes up to 7,000 feet and more. Its habitat may be traced by little heaps of herbs and flowers known as "Pika's Hay." In his book, "Among the Selkirk Glaciers," Mr. Spotswood Green tells of finding these little bouquets of cut flowers at intervals on a mountain side. Observing the first collection, his companion said "Some one has been up this way," and they were puzzled until finding more of them near the burrows of the little beast which Mr. Green names "Sewelell." It is an interesting creature which shares with the wild bee a propriety in the mountain flowers. Professor Macoun with a scientist's scrupulous care for truth, says that although called a hare and resembling the young of that species, the Little Chief Hare is quite different in structure.

The yellow-haired porcupine (*Erethizon epixanthus*) is sometimes found in the Selkirks, also squirrels; and higher up, chipmunks.

The Mountain Rat (*Neatoma Drummondii*) abounds; and there are tales to be told concerning his depredations. As the wolverine to the trapper, so is the mountain rat to the traveller. Like the porcupine, he will eat leather and anything of that sort which he can bite, but there is something human in his kleptomania. Potatoes and all edibles that can be neatly hoarded he will carry off by generous instalments; and anything shiny, such as tinware, knives, razors—and revolvers, when he can lay claws upon such valuable booty.

Trappers' game ought to be mentioned, those small animals whose pelts are of Commerce. In the Columbia and Beaver Valleys trappers once did well with martin, fisher and beaver. Of all fur-bearing animals in British North America, the beaver bears part in romance and history. Was not this precious little beast the *raison d'etre* for the most adventurous and romantic monopoly in history, the Honorable the Hudson's Bay Company?

Mink and Ermine (the weasel in its winter coat) are in the Selkirks; and muskrat, which of late years has increased in value. Professor Macoun recommends Glacier House to naturalists who may from that base make leisurely trips up the mountain slopes to study the fauna of the region.

Birds.

Unlike the wild animals, birds do not flee the people. Rather, they follow human settlement and nest in the haunts of men. Even the game-birds fear the carnivorous animals more than human creatures. During the Summer Meet in 1908, of the Alpine Club on Roger's Pass, a member identified a number of small birds. There were the solitary thrush singing his bell-like song; the yellow-warbler (canary), robin, yellow-breasted chat, white-crowned sparrow; the junco, a little grey bird with black head and white breast; the magpie with his Scotch burr, the barn-swallow nesting under the eaves at Glacier House; and, on the highest alps of Mt. Abbott, the humming bird. Also, on Roger's Pass were identified—unseen like Shelley's skylark—the vesper-sparrow, a sweet plaintive singer singing all night; and the song-sparrow, a joyous singer and the loveliest heard in the vicinity.

Professor Macoun tells about the violet-green swallow that breeds in the cliffs of the Columbia near the mouth of Beaver River;

Black Bear

The Hoary Marmot or Whistler

and about the cliff-swallow, another species common to the mountains, birds that adapt themselves to new conditions—to wit deserting the river-cliffs and building under the eaves of the water-tanks.

A more interesting bird of the mountains is the Water Ousel or Dipper (*Cinclus mexicanus*) a stout little fellow of a grayish slate colour, making his home on the margin of the brooks and cataracts. The nest is usually built on a ledge behind a small sheet of water, its outside dripping wet and looking like a lump of growing moss. The entrance is on the side away from the water, and the inside is dry and warm.

Professor Macoun emphasizes the game-birds found by him in the mountains. There are six species of grouse plentiful in their various native localities and altitudes. The white-tailed Ptarmigan (*Lagopus leucurus*) lives entirely among the summits in summer, retiring in winter to the trees at timber-line.

Immediately below is the habitat of Franklin's Grouse (*Dendragapus franklinii*), the "fool-hen" of the prospector and so called because it sits complacently on a branch until killed by a stick or stone. The name is now, and for the same reason, applied to another species, Richardson's Grouse (*Dendragapus richardsoni*) [illegible]ch ammunition has been saved to mountain travellers by these [illegible]pid birds, and they make good eating. A third species is the Dusky or Sooty Grouse (*Dendragapus fuliginosus*) whose tail is tipped with a band of ashy grey. Richardson's Grouse is all of one dusky colour which gives it the popular name, Blue Grouse. The male of Franklin's Grouse has a black tail sometimes tipped with pure white. It is a beautiful bird to see and ought to be killed only by compulsion of hunger. Ruffed Grouse (*Bonasa umbellus togata*) occur around the base of the mountains and nest in great numbers throughout the burnt timber along the Columbia.

There are various species of ducks. Two that nest in numbers are the "Saw-Bills"—the Hooded Merganser (*Lophodytes cucullatus*) and the American Merganser (*Merganser Americanus*). Another species is the Harlequin Duck (*Histrionicus histrionicus*). Of Geese there were, before the railway came, breeding grounds along the Columbia near Golden, but they soon abandoned the locality. Wilson's Snipe (*Gallinago delicata*), as late as 1890, were breeding near the water tank at Revelstoke, and are still a common species.

Eagles are not common to these mountains, though they are occasionally seen. The Bald-headed Eagle (*Haliaetus leucocephalus*) can be identified by the tarsus (*shank*) being naked all round its lower part and to the base of the toes; the Golden Eagle (*Aquila chrysaetos*) by its tarsus thickly feathered to the base of the toes.

Crows (*Corvus americanus*) are found in large numbers; Ravens (*Corvus corax principalus*) rarely, and then only in pairs or singly. A species, called in Canada Clarke's Crow (*Picicorvus columbianus*), is often confounded with the Rocky Mountain Whiskey Jack (*Perisoreus canadensis capitalis*) a much smaller bird. Both haunt camps and eat garbage, but the former is a nutcracker and lives in the conifers well up on the mountains. The Black-headed Jay (*Cyanocitta stelleri annectens*) is a beautiful bird closely related to Steller's Jay of the Pacific Coast, and easily distinguished from it by a whitish spot over the eye.

Fish.

Gairdner's Trout (*Salmo gairdneri*) also named "Steel Head," a black-spotted fish akin to the Rainbow Trout of the Rockies, is a gamey fish found in the Columbia and all its tributaries. The Red-spotted Trout, Dolly Varden Trout or Bull Trout (*Salvalinus malma*) is the real Brook Trout of the mountains from the British Columbia boundary to Alaska. It is akin to the Brook Trout east, and is found in weight from a few ounces to over twelve pounds at the mouths of some northern rivers. It is the delight of anglers who enjoy catching fish that rise quickly to the fly but are hard to kill.

The Great Lake Trout (*Cristivomer namaycush*) is found in the large lakes, and the Fraser River Salmon (*Oncorhynchus nerka*) in the Columbia River all around the Big Bend north. In the Arrow Lakes small fish of the latter species have been caught in July. Other kinds of fish there are, but these are those which fishermen find zest in catching, albeit they may agree with Isaac Walton, that most gentle, most beloved Angler of all time, that "God never made a more calm recreation than angling."

The Assembly Room, Club House

CHAPTER X.

CLOTHES FOR WALKERS AND CLIMBERS.

It is never wise nor safe to go to any mountain resort without several changes of flannels. While there are many hot days, the weather is variable, cold rains and snow sometimes occurring in the height of the summer. Always, the evenings are chilly and a wrap is necessary after dinner. Ladies will find a short serge or covert-cloth skirt, ankle-length or even shorter, a warm sweater fastening well up to the throat, a soft broad-brimmed felt hat, a motor veil of blue or green, and stout leather boots well nailed with ordinary nails, convenient and comfortable for roads and trails. A spiked walking stick, preferably with a sling, all ladies ought to have for comfort. Unless one is provided with the stout, nailed boots, a pair of new rubbers are needed.

For anything like comfort in climbing there are necessary: knickerbockers (not bloomers) made of covert-cloth (not serge which catches on rock and tears), and fastened below the knee with strap and buckle (not elastic) gaiters or puttees, two pairs of woollen stockings, and heavy, properly made, Swiss-nailed boots. Some climbers prefer puttees for the long snow-tramps. It is better to carry them in the rucksack until coming to the snow. Two extra pairs of stockings ought to be carried to exchange for wet ones at the beginning of a bivouac. Then a warm loose sweater and a short, double-breasted belted jacket with high collar, a felt hat (as above) that can be tied under the chin, if necessary, with a handkerchief or stout veil—a bandana preferable; a Jaegar cap with small opening for the face, and coming down over the neck to be ready for storms or sudden cold; and large goggles of grey-green glass (more satisfactory than smoked glass) are all necessary in a climber's "outfit." The jacket ought to have plenty of pockets, especially two large inside pockets for maps; also a slit on each side to allow the belt to pass through and fasten underneath, thus keeping the coat in place when it is necessary to have the front open. The belt must be securely sewn at the back "or it will surely be lost," says Mr. V. A. Fynn, an experienced climber whose article on "Equipment" in the Canadian Alpine Journal, 1910, is heartily recommended to intending climbers for its practical detail, even to the pattern of each garment. Mr. Fynn prefers gaiters and advises baggy knickerbockers long enough to stuff into the gaiters when tramping in deep snow. But, as has been said, some good climbers prefer puttees. A very important article is a Jaeger abdominal belt. What applies to one sex applies to the other in all matters of clothing for actual climbing.

Boots are the climber's first consideration. It would scarcely be possible to improve upon the boot so precisely described by Mr. Fynn. The sole, $\frac{5}{8}$ of an inch thick and extending beyond the uppers to protect the leather from sharp stones, should reach from toe to heel without a break, and the heel itself should project slightly all round. "A broad sole throughout materially stiffens the boot and gives a welcome sense of security when standing in ice-steps. The boot should fit closely at the heel and around the instep but entire freedom in all directions must be provided for the toes. If the

toes are cramped they will freeze very easily." This means a broad toe. The uppers should reach two inches above the ankle. Too many nails spoil "the grip" and make the boot too heavy. A few nails under the instep are an advantage. The Swiss guides always have a supply of nails and understand nailing. Mr. Whymper says that it is best to have the nailing "done on the spot," which is good advice if one's shoemaker does not understand the business. Crampons (climbing irons) are good on ice or hard snow, although unless fitting the boot closely, they are only a source of danger. In fitting them on, it is necessary to remember that the straps contract when wet. Concerning the care of climbing boots: Too much grease rots the leather; and out of the climbing season they should be kept in a dry place.

Concerning the ice-axe: "Use as light an axe as your weight will allow, and see that the pick end is very long, some 8 or 9 inches. This is very important and is of great help when cutting down steep ice-slopes." A brass ring that slides up and down the handle to which may be attached a leather thong or a strong suspender is an improvement on the old-fashioned sling.

To protect the face and neck from sunburn on the snow, zinc ointment is recommended, or some reliable emollient. The rucksack is indispensable.

The best rope is that with the red thread through it, Beale's Alpine rope; 15 or 20 yards are sufficient for two climbers, 30 yards for three, and so on. Wet rope ought to dry slowly and never on rock under a hot sun. When not in use, keep in a dry well-ventilated place.

Rules for the Rope.

(Selected from a paper by J. P. Forde in ' Canadian Alpine Journal.)

1. Climbers should be placed at equal distances, except the leader and the next climber who should have more rope. The distances vary to suit the mountain and no hard and fast intervals on the rope can be laid down.

2. See that the rope is properly tied. The "bowline" is recommended for the end men, and the "noose" for the intermediate.

3. Everyone is responsible for the portion of the rope between himself and the man ahead.

4. When paying out rope to the man ahead, keep it clear of cracks.

5. Keep your portion of the rope away from loose rocks.

6. On rock-faces and difficult traverses, only one man should move at a time, the others being ready to hold him if he slip.

7. Always make use of projecting rocks for belaying pins, after making sure that it is secure.

8. Test the rope occasionally, especially before trusting your weight on it.

9. When a party is moving steadily upward, carry a small loop of the rope in one hand.

10. When making a traverse where a serious slip might occur, do not let the rope get slack.

11. On steep couloirs where there is loose rock, keep as closely together as possible.

12. Use the rope on a dry glacier, if crevassed.

13. Always use the rope on a névé, and never let it slacken. If the party has been unroped, rope again.

14. Before jumping an open crevasse, make sure of enough slack rope behind to allow you to reach the opposite side.

15. If one man falls in a crevasse, pull him out from one side only.

16. On a steep snow-slope up or down, pass a loop of the rope around the handle of your ice-axe and stick the point of the handle well into the snow at every step.

17. Crossing a steep snow or ice-couloir where it is necessary to cut steps, let the leader go the full length of the rope himself. Those behind can hold the rope securely.

18. Never attempt a dangerous place without at least one good anchorage within the length of the rope.

To which is added a few other cautionary rules:

1. Never jump on a snow-bridge. Cross it cannily.

2. Never allow more than one at a time on a doubtful snow bridge.

3. Remember that all snow-bridges are likely to be weaker in the afternoon: this on account of the sun.

4. Eat and drink as much as possible while climbing. Do not drink ice-water.

5. Always retain a reserve of strength.

6. Never climb unless in perfect physical condition, every habit normal.

7. Avoid stimulants during a climb, save in emergency.

8. Take some extra food in case of delay.

9. Never climb a difficult mountain if it is in bad condition from fresh snow.

10. Do not glissade down an unknown slope. First know the slope.

Skilful climbers who may smile at some of these rules are asked to note that they are written down for those little skilled on rock and ice.

One of the best known Selkirk Animals

One of the denizens of Cougar Valley

GLOSSARY OF MOUNTAINEERING TERMS.

Aiguille—A needle-like rock-tower or pinnacle, isolated from a central mass.

Alpenstock—A long, stout staff, shod with a sharp, steel point, used by mountaineers.

Alps—High (white) mountains, specifically those of Switzerland. As a proper name in the plural, the great mountain ranges in Switzerland and neighbouring countries.

Alps, Alplands—The open grasslands, meadows and flowering slopes on a mountain side. In Switzerland, a pasture on the side of a mountain. (See page 36, Vol. I., No. 1., Canadian Alpine Journal.)

Amphitheatre—A natural circular area, surrounded by rising ground, usually rock or snow-masses.

Arête—The sharp ridge, edge or rocky spur of a mountain; used in connection with snow as well as rock.

Avalanche—Falling bodies of snow or ice, loosened from their hold by the heat of the sun. Sometimes rock.

Berg—The integral rock-mass rising above a snowfield; also, in the absence of snow, above the slopes of debris, or the alplands at its base.

Bergschrund—The crevasse formed between the edge of a body of snow or ice and a rock-berg. One of the chief difficulties to be overcome in mountaineering.

Boulder Clay—A stiff, tenacious clay containing boulders of all sizes; found in the moraines of a glacier; corresponds to "till."

Brule—The charred and fallen remains of a forest fire.

Cache—A hiding place; a store of provisions, etc., hidden for future use.

Canyon (Canon)—A narrow valley, generally with precipitous sides; corresponds to gorge, ravine, defile. Box Canyon—In the Rockies and Selkirks applied to the bed of a stream contained by perpendicular rock-walls.

Cirque—A circle of rock peaks.

Chimney—A steep and narrow rift in the rocks, roughly resembling a household chimney with one side removed.

Chinook—A warm, dry, western wind which frequently blows in the Rocky Mountains. Similar to the Fohn wind of the European Alps.

Col—The crest of a neck or pass between two mountain peaks, usually though not necessarily covered with snow.

Confluent Glacier—One tributary to a trunk-glacier; generally flowing from a greater elevation.

Cornice, Snow-Cornice—An overhanging edge of snow at the crest of a peak or ridge, caused by drifting; ice is formed by the snow thawing and freezing.

Couloir—A steeply ascending gully, gorge, or ravine in the side of a mountain or rock-peak; generally, though not necessarily, filled with snow.

Crack—A rift in the rocks, narrower than a chimney.

Crampon—A steel frame, set with sharp spikes, strapped to the boot to facilitate climbing on ice (climbing irons).

Creek—Name applied in Canada and the United States to small streams. It is also applied in mountain regions to torrents.

Crevasse—A fissure or crack formed in a snow-field or glacier; caused by non-elasticity of the ice when moving down the uneven surface of its rocky bed. Longitudinal crevasses are formed in the direction of the flow; transverse crevasses, at right angles to the flow.

Diamond Hitch—A technical process of fastening the pack to the pack-saddle, so called from the diamond shape of the rope upon the pack when finished.

Dip—The angles which rock or other strata make with the plane of the horizon. Spoken of in degrees of a vertical circle.

Dirt Bands (Forbes dirt bands)—Dark stripes extending across the surface of a glacier, caused by blown rock-dust collecting in shallow depressions. The depressions are due to open transverse crevasses having joined through pressure from behind. The bands are more or less circular in form, owing to the central ice of the glacier moving more rapidly than the sides.

Divide—The height of land between two drainage basins. The watershed.

Dome—A rounded snow-peak.

Dry Glacier—The lower part of a glacier where it is free from snow.

Fault—A break in a rock-mass by which the strata on one side of the break are depressed so that they are no longer continuous with those on the other side. It may represent displacement of a few inches or of thousands of feet.

Firn—Accumulated snow while in a granular condition and before it has been consolidated into the ice of a glacier; corresponds to the névé or snow-field forming the source of a glacier.

Fohn (German)—A warm wind from a southerly direction.

Forefoot—The part of a dry glacier adjoining the terminal moraine.

Gabel—German for fork; a notch. A deeply cut notch in a ridge.

Gendarme—Name applied to an isolated rock-tower or pinnacle, separated from the mass of which it had originally been a part.

Glacier—The form in which snow accumulating on the higher parts of a mountain range, above snow-line, finds its way down into the valleys. The ice overflows from a firn, or névé or snowfield.

Hanging Glaciers (Glacierettes)—Small glaciers in pockets high on mountain-sides and over-hanging the valley. They frequently nourish trunk-glaciers below. (Vide Mt. Fox, Selkirks.)

Cliff Glaciers (Glacierettes)—Comparatively small glaciers on broad high plateau-like shelves of mountains. They break off in huge pieces falling to the snowfields or trunk-glaciers below. (Vide Mt. Gordon, Rockies.)

Glacier Table—A block of stone, a boulder, supported by a column of ice which its shade has preserved from melting; generally seen on a dry glacier.

Glissade—To slide down a steep snow-slope; performed sitting or standing according to the conditions of the snow. An ice-axe or alpenstock is used for steering.

Grat—An edge or sharp ridge; corresponds to "arête."

Gully—A wide or narrow ravine cleaving the face of a precipice or steep mountain-side—a couloir.

Hand-traverse—Traversing by means of hand-holds only.

Hanging Valley—A tributary valley opening high up on the side of a main valley; often carved out by glacial erosion. It is generally marked by an abrupt step at the mouth, due to the eroding agency having continued its work in the main valley long after it had ceased in the hanging valley.

Height of Land—The watershed between two drainage areas. A crest from which the ground slopes in opposite directions; corresponds to "divide" or "watershed."

Hoodoos—The name given in Western Canada to certain grotesque columns produced by erosion, standing on the slopes of mountains and deep gulches.

Ice-Axe, Ice-Pick—A tough wooden staff, about 3 feet 6 in. long, with an adze-shaped steel head at one and a sharp spike at the other. Opposite the adze, the head is drawn to a point, sometimes set with teeth. It is used to cut steps in steep ice or snow-slopes.

Ice-Fall—That part of a glacier which is much crevassed and broken into séracs through flowing over a precipitous part of its bed.

Knife-edge—A very narrow rock-ridge.

Langthal (German—long valley)—The depression between a moraine and the mountain side, usually filled with snow.

Massif—A central mountain-mass. The dominating part of a range of mountains.

Mittlegrat—A middle edge o[illegible]'ge, for instance: the rock-edge between two snow-fields or parts [illegible] glacier.

Moraines—The piles of rock [illegible]es and boulder-clay surrounding a glacier and which have be[illegible]nsported by it. Moraines are called Terminal, Lateral, and M[illegible] according to location: at the end, the sides, or in the middle [illegible] glacier. Lateral moraines are generally and medial moraines are often piled hundreds of feet above the glacier. This is owing to the fact that they consist of a cone of ice which has not melted proportionately with the main body of the glacier, because of the protection afforded by the thick veneer of rock, boulders and clay.

Moulin—A nearly vertical shaft or well cut through a glacier by a stream flowing on the ice.

Névé—The accumulated snow forming the source of a glacier; corresponds to "snow-field" or "firn."

Nunatak—A crest or ridge or rock appearing above the surface of an ice-field or glacier.

Piedmont—A term applied to a compound type of glacier made up of a series of glaciers of the common alpine type, all of co-ordinate importance, which coalesce laterally but retain their individuality from névé to nose. The Asulkan Glacier of the Selkirks and the Wenkchemna and Horseshoe Glaciers of the Main Range are examples.

Pothole—A cavity more or less cylindrical in form, varying from a few inches to many feet in depth and diameter, made by an eddying current of water which causes stones and other material to revolve and thus wear away the surface with which they come in contact.

Red Snow (*Protococcus nivalis*)—A unicellular plant, an alga, related to the sea-weeds, and belonging to the lowest form of plant

life. It grows on the surface of the snow, giving it a crimson stain.

Re-entrant—Rocks are spoken of as being at a re-entrant angle when their faces slope inwards from the perpendicular.

Roche Moutonnées—A group of scattered knobs of rock, rounded and smoothed by glacial action; so called from their resemblance to a flock of sheep lying down.

Rock-Fall, Rock-Slide—An accumulation of broken rock fallen from the cliffs above, through disintegration of their masses; often of considerable extent.

Rucksack—The modern mountaineering knapsack.

Schrund—A crack or crevasse in the ice of a glacier.

Scree—Loose, broken shale at the foot of a cliff; slopes of debris fallen from above through disintegration.

Séracs—Fantastic pillars of ice formed on a glacier by the intersection of longitudinal and transverse crevasses where the grade of its rock bed is broken by ledges or steps.

Snow-line—The lowest line of permanent snow on a high mountain.

Snow-Mushrooms—Accumulation of snow in the woods on trees, stumps, etc., resembling giant fungi of the species named. They are seen of great size and variety along the Canadian Pacific Railway through the Selkirks.

Snout—The most advanced part of a dry glacier; corresponds to "forefoot."

Snowshed—A roofed construction of heavy timbers, built over the line of railway to protect it from avalanches falling from the mountain sides. There are five different types of shed constructed along the line of the C.P.R., according to the nature of the avalanches that may fall and the amount of resistance required.

Stoneman, Steinman—A pile of rocks roughly laid together, usually on a mountain-peak or ridge, and intended to serve either as a landmark or as a record of a visit; a cairn.

Striae, Striation—Grooves, or scratches cut in rocks or boulder-clay by the action of ice moving down an incline.

Strike—The direction in which the various strata comprising a rock mass lie. Generally spoken of with reference to the cardinal points of the compass.

Summit—The highest point of a mountain or peak. The highest part of a mountain pass. The highest crest of a ridge.

Talus—The mass of rock fragments lying at the base of a mountain cliff, formed by the accumulation of pieces brought down from above by the action of gravity, frost, rain, etc.; equivalent to "scree" or "debris."

Tarn—A small mountain lake.

Till—A stiff clay containing boulders of all sizes up to several tons weight; often smoothed and striated by glacial action.

Timber-line—The highest place on a mountain where trees are.

Tongue—The extreme end of a glacier; corresponds to "forefoot" or "snout."

Trail—A path cut through forest, or built along a mountain slope to render travel on foot or in saddle possible. **Corkscrew Trail**—A trail climbing steep mountain-slopes in zigzags, to obtain a suitable grade.

Traverse—The passage along a sloping surface of rock, ice, or snow in a general horizontal direction; also used to define the ascent of one side of a peak and the descent of the side opposite; again, for a ridge that has been travelled from end to end.

Verglas—A thin layer of ice glazing rocks. Under exceptional conditions of weather rain freezes as it falls on the rocks, and is then sometimes said to fall as 'verglas.'

Wall—A term used to denote a steep face leading up to a ridge.

Watershed—The divide between two drainage systems or catchment areas. The height of land between streams flowing in opposite directions.

EXTRACTS FROM THE ACT FOR THE PROTECTION OF GAME IN BRITISH COLUMBIA

(Amended to 1909 and 1910)

1. This Act may be cited as the "Game Protection Act, 1898."

4. No person shall at any time purchase or have in possession, with intent to export, or cause to be exported, or carried out of the limits of this Province, or shall at any time or in any manner export, or cause to be exported or carried out of the limits of this Province, any or any portion of the animals or birds mentioned in this Act, and this provision shall apply to railway, steamship and express companies.

2. It shall be lawful for the Provincial Secretary, under such conditions as he shall think fit, by writing under his hand, to issue permits for the exportation of any animals or birds, alive or dead, or any part thereof, for scientific, zoological, or Government purposes.

9. It shall be unlawful for any person at any time—

(a) To kill any game bird or animal protected by this Act between one hour after sunset and one hour before sunrise:

(b.) To buy or sell, or to offer to buy or sell, the heads of mountain sheep, elk, moose, or caribou, or the teeth of wapiti or elk.

(d) To expose for sale any deer, mountain sheep, goat, elk, moose, or caribou without its head on, or any game bird without its plumage.

14. It shall be unlawful for any person (other than officers and men of His Majesty's Army and Navy and of the permanent Corps of Militia for the time being on active service in the Province), who is not actually domiciled and has not been in actual residence for six months in this Province, to at any time hunt, take or kill any animal or bird in this Province without having first obtained a license in that behalf. Such licence shall be in the form set out in Schedule "A" to this Act; every such licence may be signed and granted by the Provincial Game Warden or any Government Agent in this Province, and shall be in force for [illegible] that period for which the same has been issued: The fee to be paid for a ge[illegible]e to shoot any animal or bird shall be one hundred dollars ($100), but [illegible] hall not give the holder the right to shoot more than two moose, one wapi[illegible] or e[illegible] wo mountain sheep rams of any one species or more than three in all; three goats, three caribou and three deer of any one species, or more than five in all, or more than two hundred and fifty ducks. Such licence to hold good from September 1st to July 15th.

The fee to be paid for a licence to hunt deer, bear and goats for any one month between the 1st day of September and the 15th day of December shall be twenty-five dollars.

The fee for a licence to hunt bear in the spring between the 1st day of January and the 15th day of July shall be twenty-five dollars.

For shooting each mountain sheep, mountain goat, moose, wapiti or caribou during the close season a fine shall be imposed of not less than $250 or not more than $500.

For shooting any species of deer other than moose, wapiti or caribou during the close season, the fine shall be not less than $25 or more than $100 for each animal.

For shooting each mountain sheep, mountain goat, moose, wapiti or caribou in excess of the number allowed by this Act, a fine shall be imposed of not less than $250 and not more than $500.

For shooting ewe or lamb of the mountain sheep at any time, the fine for each animal shall be not less than $250 or more than $500.

24. (a) It shall be unlawful for any person to use an automatic shot-gun in the pursuit of game in this Province. The penalty for offending against the provisions of this section shall be not less than fifty dollars or more than two hundred and fifty dollars for each offence. This section shall not come into force until proclaimed by the Lieutenant-Governor in Council.

34. (b) It shall be unlawful for any person, (other than officers and men of His Majesty's Army and Navy and of the permanent Corps of Militia for the time being on active service in the Province), who is not actually domiciled and has not been in actual residence for six months in this Province, at any time to angle (as the term is generally understood) for any fish in this Province, without first having obtained a licence in that behalf. Such licence shall be in the form set out in schedule D hereto, and the fee for such licence shall be five dollars.

"The fee to be paid for a general licence to hunt for or shoot any animal or bird, and to angle, shall be $100, but such licence shall not give the holder the right to kill more than two moose, two wapiti, two mountain rams of any one species, or more than three in all; three goats, three caribou and three deer of any one species, or more than five in all; or more than two hundred and fifty ducks. Such licence shall only hold good between January 1st and December 31st of the year it is issued.

"The fee for a licence to hunt bear in the spring between the 1st day of January and the 15th day of July shall be twenty-five dollars.

"The fee to be paid for a season's license to shoot birds shall be fifty dollars. Such licence to hold good from September 1st until March 31st in the following year: Provided that the Provincial Game Warden may issue a special license to kill game birds to British subjects who are not residents of this Province, for a fee of five dollars a week.

"The fee to be paid for a licence to angle shall be five dollars, such licence to hold good for one year from the date of issue."

Park Regulations

No person shall, without permission from the Minister of the Interior, reside permanently within other portions of the Parks than those sold or leased.

There shall be a reservation for the use of the public of one hundred feet in width along the shore of each lake, river, or stream within the Parks, and any grant, lease or other disposal of lands within the Parks shall be subject to such reservation.

Every person entering or passing into, across or through any of the Parks, shall, when requested to do so by the Superintendent, or any Forest Ranger, Game-guardian or any other officer having charge of or jurisdiction within such Parks, truthfully answer any enquiries made to him by such Superintendent, Ranger, Guardian or officer as to his name, his post office address, the duration or the proposed duration of his stay in the Park and the portion thereof he intends to visit or has visited, and shall give such other information of a similar nature as such Superintendent, Ranger, Guardian or other officer may ask him.

PRESERVATION OF PROPERTY

The defacement of any object at any of the hot springs, of any of the natural rock formations, or of trees, timber, bridges, seats or other structures by cutting, written inscription or otherwise, and the throwing of any stones, sticks or other substances whatsoever into any of the springs or streams in the Parks are strictly forbidden.

No person shall cut, remove, or injure any trees or timber, growing or dead, or remove or displace any mineral deposits or natural curiosities except by written permission of the Superintendent.

FIRES

No person shall at any time set out or cause to be set out or started, any fire in the open air within the limits of the Parks, except for the purpose of cooking, obtaining warmth, or for some industrial purpose permitted by the Minister of the Interior to be carried on; and every person who makes or starts a fire in the open air for cooking or camping purposes shall:—

Select a bare rock whereon to kindle such a fire wherever possible, and if there be no bare rock in the neighborhood, then a site on which there is the smallest quantity of vegetable matter, dead wood, branches, brushwood, dry leaves or resinous trees;

Clear the place in which he is about to light the fire by removing all vegetable matter, dead trees, branches, brushwood and dry leaves from the soil within a radius of ten feet from the fire;

Exercise and observe every possible precaution to prevent such fire from spreading, and carefully extinguish the same before quitting the place;

Any person who throws or drops any burning match, ashes from a pipe, lighted cigar or any other burning substance within the Parks shall completely extinguish before leaving the spot the fire of such match, ashes from a pipe, cigar or other burning substance.

Any person who shall directly or indirectly, personally or through any servant, employee or agent, kindle a fire or let it run at large on any land not his own property; permit any fire to pass from his own land, or allow any fire under his charge, custody or control, or under the charge, custody or control of any servant, employee or agent, to run at large, with the result that such fire shall pass into any of the Parks, shall be liable, in addition to any penalty imposed by the Provincial Act, to the penalty imposed for any breach of these Regulations.

PREVENTION OF NUISANCES

Any person camping within the Parks shall carefully clear up the ground on which his camp was located before his departure therefrom, and shall restore it as nearly as possible to its natural condition.

All refuse shall be destroyed or buried.

MINING

The Minister of the Interior may issue licences of occupation for the working of mines and the development of mining interests within the limits of the Parks, subject, however, to the approval by the Governor in Council as to the terms, conditions and duration of such licences of occupation.

LICENCES

Annual licences may be issued by the Superintendent to guides, and no person shall be permitted to act in any such capacity within the Parks without such a licence in good standing. No licence to act as a guide shall be granted to any person under eighteen years of age. Each such licence shall expire on the thirty-first day of March next after the date of its issue. The fee to be charged for such licence shall be five dollars.

No guide shall be entitled to charge for his services more than fifty cents per hour.

The Minister of the Interior may issue a licence good for one year from 1st May in each year to any person or persons undertaking to place on any waters within the Parks a steam yacht or other vessel or vessels suitable for the conveyance of passengers, upon such person or persons paying the fee fixed by the Minister therefor and in all respects complying with the Steamboat, Inspection Act or Acts regulating steam and other vessels. The maximum fare which may be charged for the conveyance of passengers in such boats shall not exceed, when running on regular trips, up to eight miles, fifty cents; above eight and up to twelve miles, seventy-five cents; over twelve miles, one dollar.

LIVERY STABLES

Every person who keeps a livery stable or provides outfits for parties travelling through any of the Parks shall keep a record of the parties outfitted by him, the number of persons, their names and addresses, the guides accompanying them, the date of departure, their destination and route of travel, the time they propose to remain in such Park, and the firearms carried by the party. Such record shall be open at any time to inspection by the Superintendent, Ranger, Guardian or other officer having jurisdiction in the Parks.

PROTECTION OF GAME

No person shall hunt, take, kill, wound, injure or destroy, or pursue with such intent, any wild animal or bird within the Parks.

No person shall fish for, take, catch or kill, from or in any of the waters of the Parks any fish that inhabit such waters, or attempt so to do, with any kir . of net, seine or snare, rack, trap or weir, or night line, or set line, or in any other way than by hook and line.

No person shall use dynamite or any other explosive, or any poison, for the purpose of killing, destroying, injuring, or taking fish in or from the said waters.

Fishing for the purpose, or with the object of selling, bartering or trafficking in the fish so taken is hereby prohibited.

No person shall, in or from the waters of the Parks, kill or retain or carry away any fish less than six inches in length, and when any fish of a length less than six

inches is taken or caught the same shall forthwith be returned to the water by the person taking or catching the same without unnecessary injury.

No person shall, in or from the waters of the Parks, retain or carry away, more than fifteen fish in one day.

No fish shall be taken between the fifteenth day of September and the fifteenth day of May. Fishing may be prohibited in any of the waters of the Parks, or limited therein to any specified season of the year by the order of the Minister of the Interior.

The illegal possession of each and every head of game shall be a separate offence.

No person residing in or visiting or travelling through the Parks, except a duly authorized game guardian, shall have in his possession or carry any rifle, shot gun or other firearm, unless such rifle, shot gun or other firearm shall have been sealed by the Superintendent or other officer authorized by the Superintendent; and no such seal shall be broken within the limits of the Parks except as hereinafter provided.

Any unsealed rifle, shot gun or other firearm found within any of the Parks may be confiscated by the Superintendent, ranger, guardian or other officer.

GAME GUARDIANS

Each head guide shall have the authority of a game guardian for the enforcement of the laws and regulations relating to the protection of game and fish and the prevention of fire.

MISCELLANEOUS

The use of automobiles of every kind is prohibited on any road or elsewhere within the limits of the Parks.

Any person who violates any the provisions of any of these Regulations, shall, except as hereinafter specially provided, be liable on summary conviction to a penalty not exceeding fifty dollars and costs, and in default of payment thereof, to imprisonment for a period not exceeding three months.

A printed copy of these Regulations to be furnished by the Department of the Interior for that purpose, shall be posted and kept in a conspicuous place in every Government office and in every hotel, boarding-house, bath-house and livery stable within the Parks.

Wherever in these Regulations the expression "The Superintendent of the Park" or "the Superintendent" is used it shall mean the officer holding that office at the present time under appointment by the Governor in Council, or any person who may be hereafter so appointed to the said office in connection with any of the Dominion Parks.

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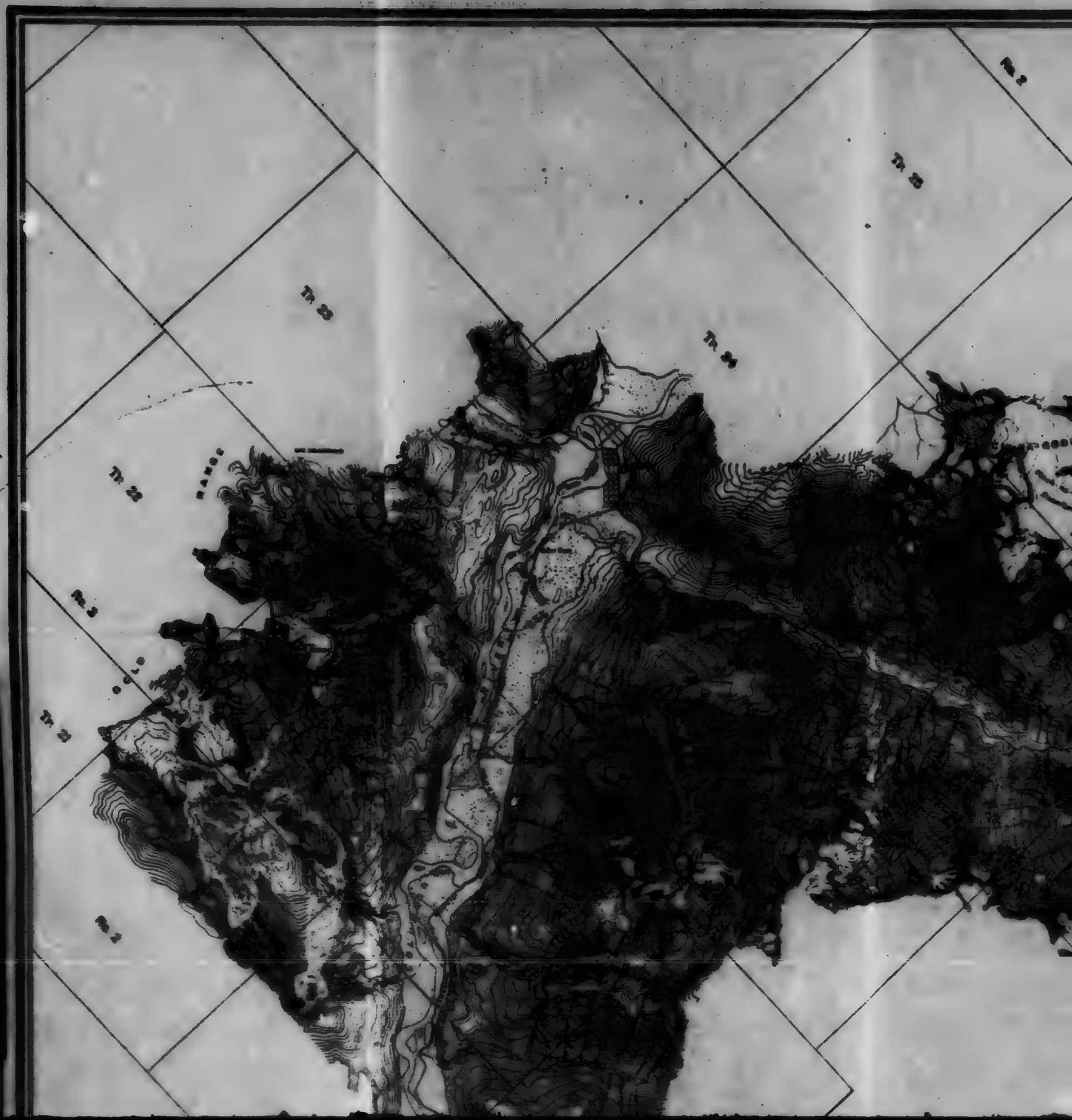
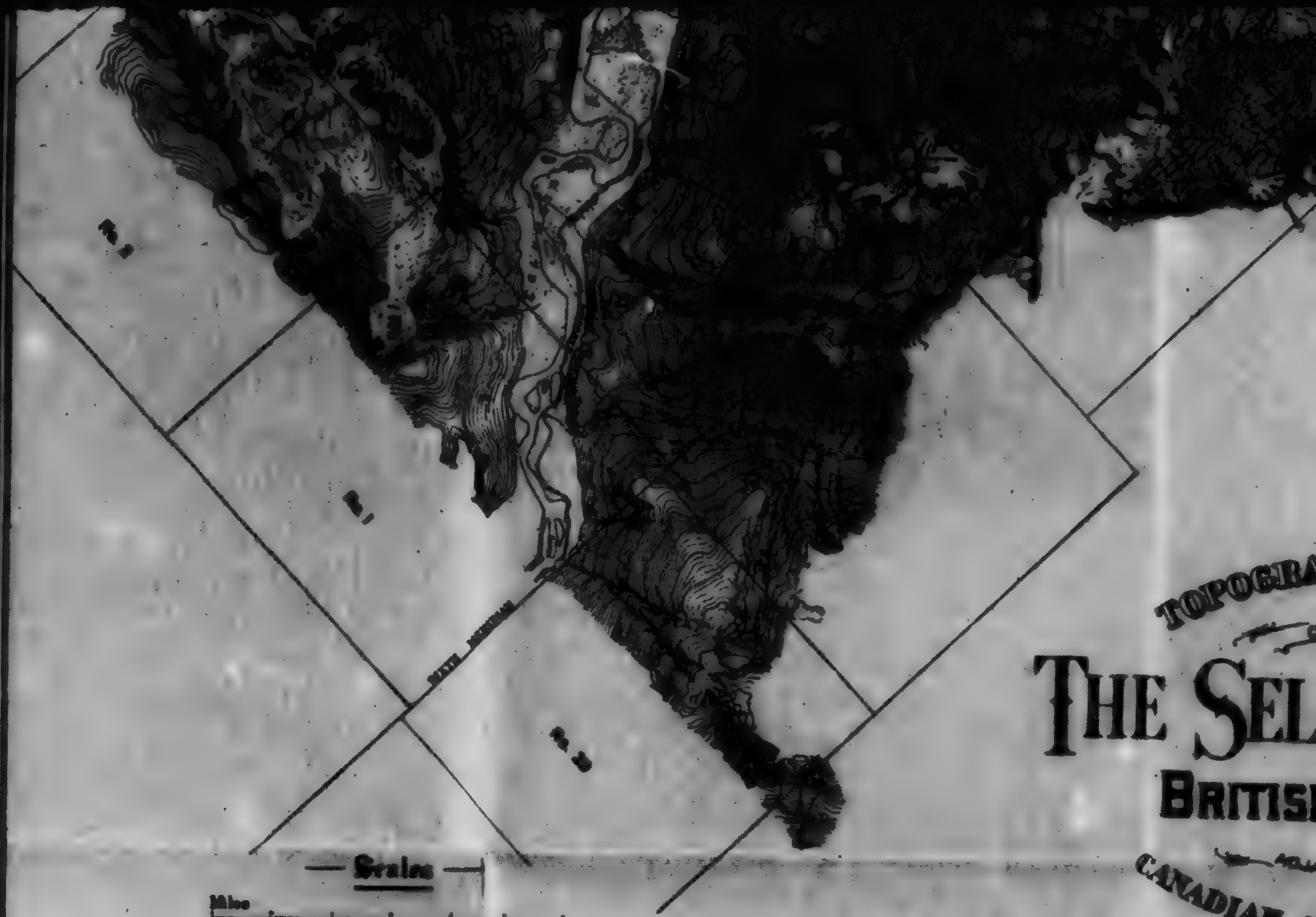


Columbia River
Tp. 28
Tp. 29
Tp. 30
Tp. 31



TOPOGRA

THE SEL

BRITISH

CANADIAN

From Photographic
Adjusted by H.G.

— Scales —

Miles

Feet

Natural Scale..... 1/50,000

Contour Interval..... 100 Feet

Datum..... Mean Sea Level

OGRAPHICAL MAP

OF PART OF

ELKIRK RANGE

TISH COLUMBIA

ADJACENT TO THE

AN PACIFIC RAILWAY

Surveys by Arthur O. Wheeler F.R.G.S.
by H.G. Wheeler and M.P. Bridgland B.A.

1901-2

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